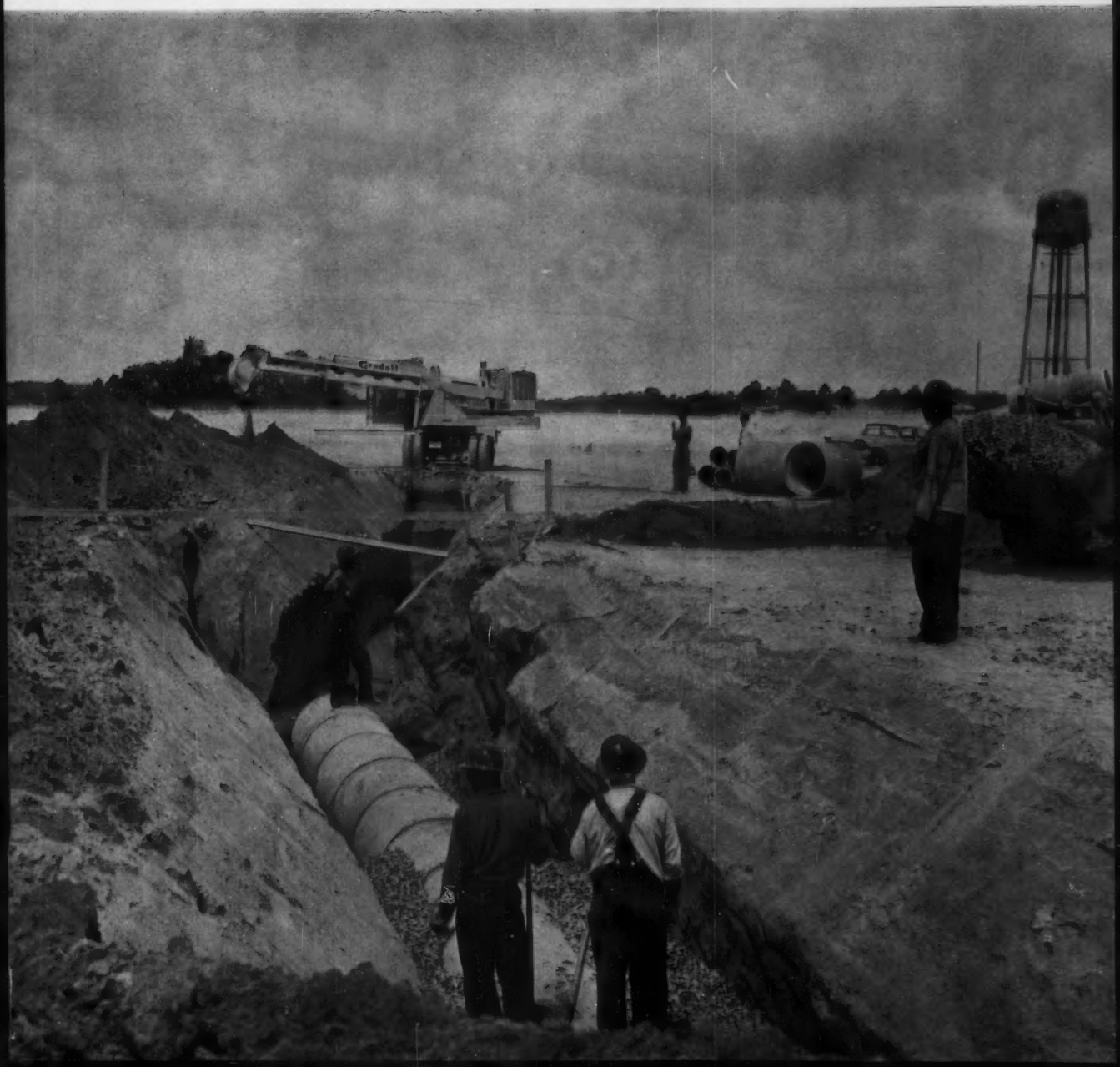
Construction Methods AND EQUIPMENT

AUGUST, 1960

PRICE $1.00

A McGRAW-HILL PUBLICATION



In Georgia, hydraulic excavator digs neat pipe trench at site of new can plant.

CONTENTS, PAGE 4

25% additional service with Yellow Strand "POWERSTEEL" at Watauga Stone Co.

"Rugged" is the only way to describe the job of digging rough shot rock out of this Tennessee quarry. It takes rugged equipment to match the job and for this reason, Watauga Stone Co., Carter County, Tennessee, specifies Yellow Strand "POWERSTEEL" Wire Rope.

Hoist and crowd lines take quite a beating—they used to last 3 weeks on this big 2½ yd. shovel. Three years ago Watauga tried—and liked—Yellow Strand "POWERSTEEL" Wire Rope. They found Yellow Strand "POWERSTEEL" runs an average of 4 weeks—6 days per week, 8-hour shifts—between hoist and crowd rope changes. They report, "We're more than satisfied with Yellow Strand "POWERSTEEL."

25% longer life is an excellent average. B & B's extra high strength rope is designed for heavy loads and abrasive conditions. It's available right now from your Yellow Strand Distributor. Call him! *Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.*

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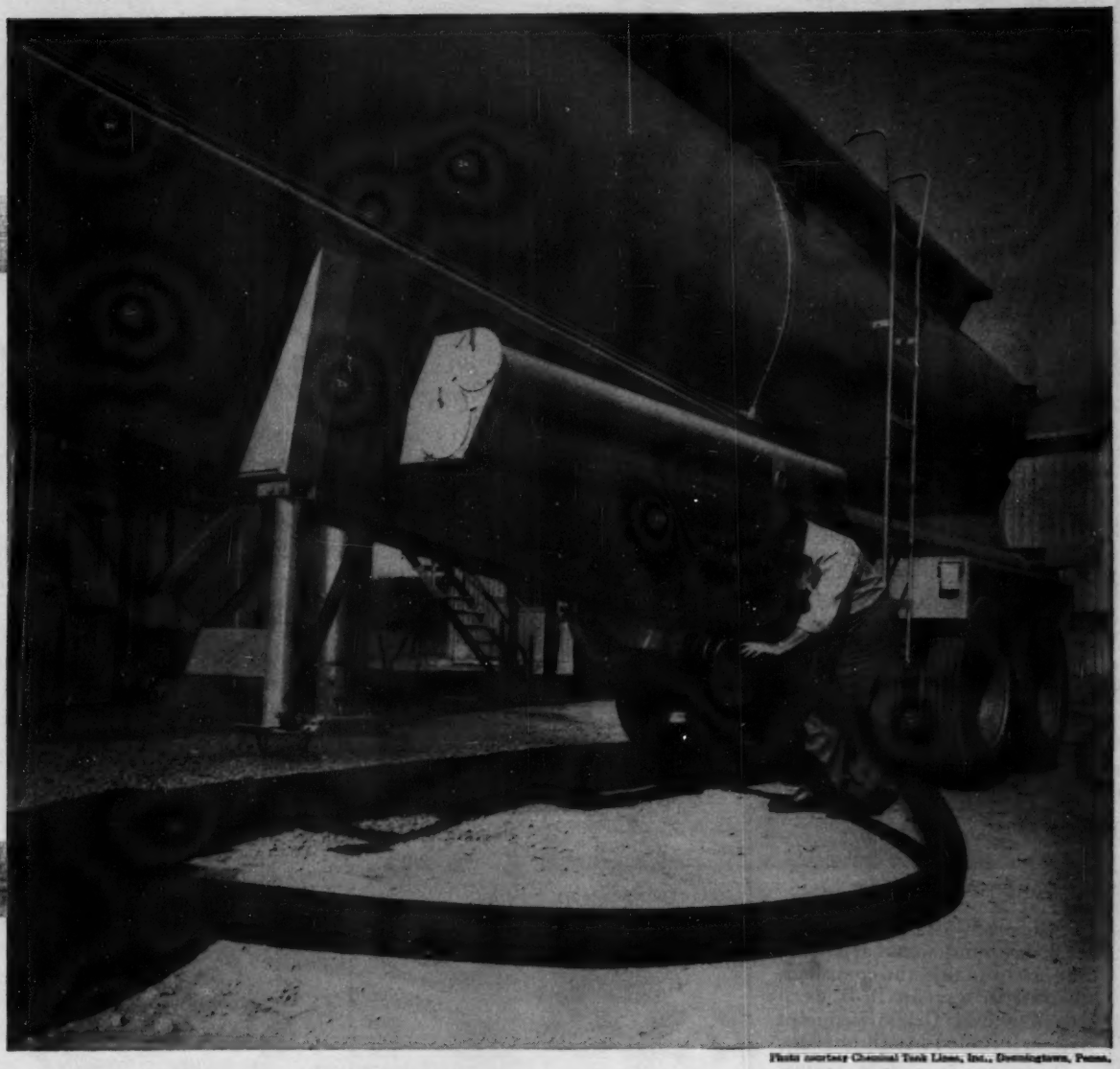

Photo courtesy Chemical Tank Lines, Inc., Downingtown, Penna.

Hose gulps dry cement, unloads truck in 30 minutes

Fast handling of bulk cement gets big assist from B.F.Goodrich hose

WHOOSHING through that hose at a 5-barrel-a-minute clip is dry cement on its way to storage hoppers. Unloading with hose instead of screw-type metal conveyors is faster and cleaner; hook-ups are easier to make. But the job couldn't be done with an ordinary hose. Friction of the abrasive particles would wear it out fast.

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Now, with B.F.Goodrich hose, bulk trailers operated by Chemical Tank Lines, Inc., Penna., can unload 113 barrels of cement in 30 minutes. The hose in the picture has been used 15 months, shows no sign of wearing out.

Because it's light and flexible, workmen find this BFG hose easy to handle, fast to connect. No need to jockey trucks back and forth to find just the right spot. The hose cover is built to take dragging over rough ground, exposure to all kinds of weather.

For more information on this new cement-handling hose—or any of the many different products BFG makes for industry, write *B.F.Goodrich Industrial Products Co., Dept. M-895, Akron 18, Ohio.*

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CEMENT-HANDLING HOSE

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Sanitary Sewers, El Paso, Tex.
Contr.: T. N. O'Kelley, Utility Contractors

AT THE REDUCED atmospheric pressure of ⅔-mile above sea level, any pump works at a handicap. Despite this, the contractor desired to dry an 18-ft deep trench with his Griffin Wellpoint System installed on only one side.

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• Based on previous local experience, it did not seem feasible. However, the Griffin system — *installed on one side* — successfully maintained a dry trench from the start, enabling T. N. O'Kelley to beat his 100-day time limit by 40 days.

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213-A

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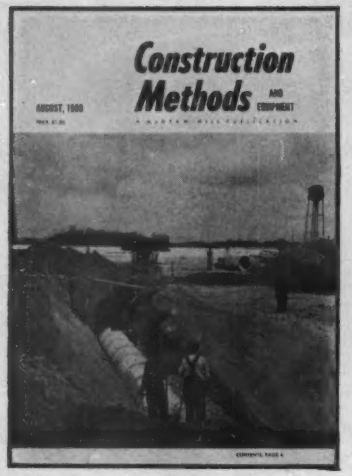


ON THE COVER

Daniel Construction Co. of Greenville, S.C., is building a new plant for Continental Can Co. at Augusta, Ga. Included in the multi-million dollar project are two extensive drainage systems. Trenches 9 and 10 ft deep for the concrete pipe are dug by two Gradalls fitted with 5-ft-wide buckets to match trench bottom width. At the top, trenches are widened to 10 ft for safety. At right, a Hough Payloader brings in a load of crushed stone for padding and backfill around the pipe.

DEPARTMENTS

Construction News From Washington 11
Job Talk 22
Trends in the Machinery Market 39
Construction Business 52
Picture of the Month 69
Construction News in Pictures .. 73
Construction 'Round the World 82
Editorial 87
Construction Men in the News .. 156
Sales and Service 159
Construction Equipment News .. 164
New Publications 183
The Maintenance Shop 189
Methods Memo 194

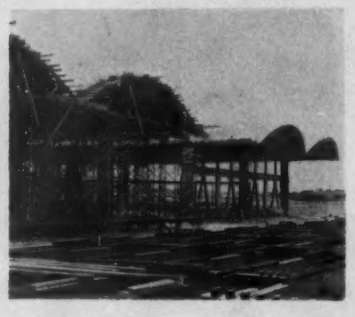
NEXT MONTH

There's little that is orthodox about the way three parallel sewers are being built on a New York City job. Instead of three trenches specified, there's only a single large one. Instead of being driven, soldier piles to hold the sides of the cut are set in pre-bored holes. And tractor shovels excavate the trench by shoving spoil out the end.

Photo Credits—76 (top), Geo. H. Watson, 82 (left) Fiji Times—Stinsons Photo.

AUGUST, 1960

Pay Dirt in This Issue

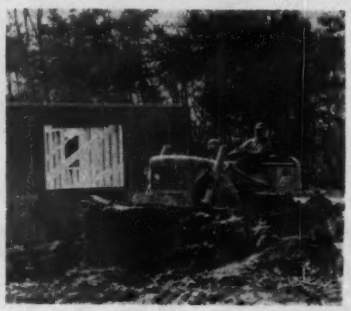


Rolling Scaffolding Holds Barrel Shell Forms..... 88

The forming subcontractor on the new terminal building at Atlanta Municipal Airport made just two sets of movable forms serve for concreting 11 barrel arch roof shells.

Unusual Structures Mark This Big Road Job..... 93

A New Jersey contractor finds that structures ranging from a sea wall anchored by master piles to a railroad bridge built from the top down make this road job an unusual one.



Rigs Ride Trucks, Radio Keeps 'Em in Touch....123

This Columbus, Ohio custom excavator makes his fleet mobile by providing a companion radio-equipped truck to carry each rig from job to job. The operators drive the trucks.

Relay Team Digs Contractor Out of Tight Spot..... 92
Helicopter Strings Pipeline in Swamp.....103
Contractor Races Time and Tide on Bridge Job.....107
Heavy Precast Panels Require Double Handling.....117
Specs For Your Files—Comparative Specifications of . . .
MOTOR GRADERS.....132
STEEL ROLLERS.....134
PNEUMATIC-TIRED ROLLERS.....138
EARTH COMPACTION—Compaction Equipment (cont.)...142

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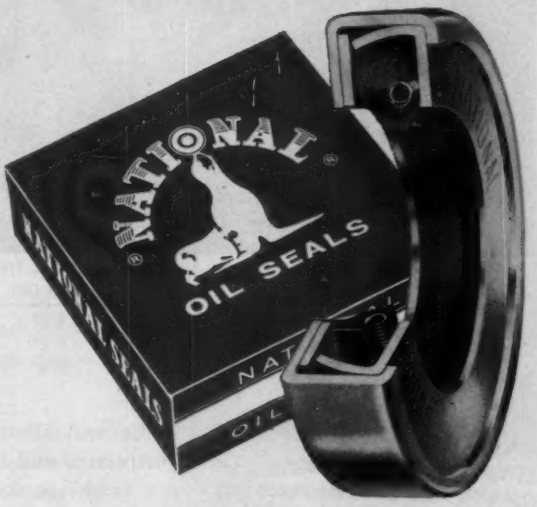

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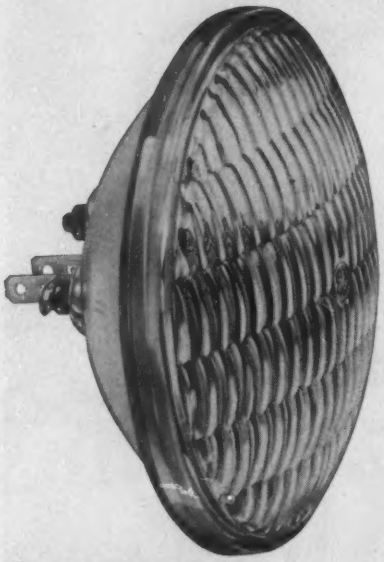

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36 NORTHWESTS for GARGARO CO., INC.

Detroit, Michigan

GARGARO COMPANY, Inc. of Detroit, Michigan, has long been a user of Northwest equipment. The Model 6, 40-ton Lifting Crane pictured above makes the 36th Northwest that this active outfit has bought. Thirty-six purchases of one make is a lot of endorsement and points up the successful performance that Northwests give.

The job is the Algonquin Relief Sewer, a 9,500 ft. tunnel 16 ft. wide, in Detroit. The Crane is handling the cars as they come from the excavation.

These smooth working Northwest Lifting Cranes are always ready to go. Heavy-duty Independent High Speed Boom Hoists stand hour after hour booming. There is plenty of cable capacity and a 3d drum gives you three load lines. Smooth swing and the *true* feel of the load which comes with the Feather-Touch Clutch Control assures greater accuracy in spotting loads. Sectional Boom Hoist Rigging, Pendent Lines and Boom Struts, Flange connected Booms with either open or closed throats — everything you require for any crane operation is available.

If you are considering new Crane, Shovel, Dragline, Pullshovel or Truck Crane equipment, give some thought to why so many Northwests are repeat orders. Let a Northwest man bring you up-to-date on the latest Northwest advantages.

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NORTHWEST

LUBE LOGIC Five tips to

Texaco "lay-away plan" protects exterior of idle equipment

Equipment that won't be needed for a while is sometimes simply parked somewhere so nobody will fall over it. Well and good, but not enough—because rust and corrosion account for almost half of what you spend on equipment maintenance. Here's a 6-step program that will keep idle equipment in cracker jack shape no matter how long it's out of use, or where it's stored. The basic ingredient is Texaco Rustproof Compound L—a remarkable product that keeps rust from starting, and acts to loosen rust that's already on the equipment.

Before applying Texaco Rustproof Compound L, make sure all exterior surfaces are clean and fairly dry.

Coat all adjustment bolts and other exposed threads with Rustproof Compound to facilitate removal or adjustment.

At temperatures of 65° or more, Texaco Rustproof Compound L can be applied to smooth accessible surfaces by brushing.

At temperatures below 65°F, or for inaccessible and complicated areas, spraying is the best way. You can thin the Rustproof Compound to a sprayable consistency by adding naphtha to form a 10 to 50% solution. Add the naphtha slowly to the compound and stir vigorously so the whole batch is the same consistency.

Apply tags at conspicuous points on the equipment describing the rustproofing measures that have been taken.

Thoroughly lubricate all equipment before storage.

Starting up equipment after storage

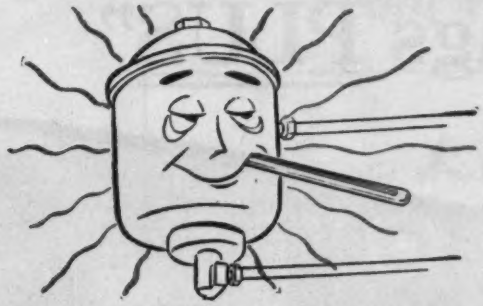
In most cases it's not necessary to remove Texaco Rustproof Compound L. You should, however, remove it from surfaces that will come into contact with personnel (such as ladders, seats and handles) and from surfaces that are heated to high temperatures when the equipment is operated.

Since Texaco Rustproof Compound L is *not* a lubricant, all working surfaces and lubrication fittings should be wiped clean before use, and the correct lubricant should be applied before starting up.

Thicker oil won't stop gear-case drooling

You can't fix leaking seals on a gear-case simply by switching to a heavier-grade gear lubricant, because in gear cases carrying heavy loads, the thicker oil simply increases gear-case temperature, which thins out the oil and it starts leaking again. Sometimes, however, foaming and leaking of gear-case lubricant indicates that the oil level is too high. By keeping vents open and keeping the oil at the recommended level, you prevent build-up of pressure which would cause leakage.

trim maintenance costs



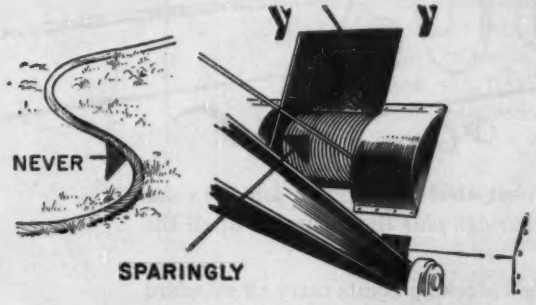
A filter that's working runs a temperature

Oil filters last so long these days it's sometimes hard to say when they were last changed. But they're so important to engine performance that it's essential that you know whether they're too full to filter right. Here's a simple way to find out.

A filter that's working will be as warm as the engine oil. If the filter on a fully warmed-up engine remains cool to the touch, it's a safe bet that it's too clogged up to let any oil through. Just to double-check, tap the filter case sharply. A metallic ringing sound means the cartridge is still in good shape. A soggy thud often means that the filter is loaded. Top mileage for even the best filter is 6,000 miles, never more.

Crawler treads are happier dry

There are few places where good lubrication is more important than in track-roll bearings, but make sure you don't lubricate the crawler treads themselves in a burst of enthusiasm. The pins that connect the links of crawler treads are designed to operate without lubrication, because dirt or other abrasives would act as a lapping compound in service. Result: much shorter service life for the track. Moral: if you don't want to lap your crawler link pins, don't oil them.



How often should you lubricate wire rope?

How much lubrication is good for wire rope and cable depends mainly on how it's used. Cables that are dragged in dirt shouldn't be lubricated at all. Oil simply holds the dirt where it can work into the strands and cause rapid wear. Cables that are wound on drums equipped with clutches should be lubricated sparingly to prevent fouling the clutch faces with lubricant. With other wire ropes, apply Texaco Crater A every 10 to 100 hours as necessary to avoid dryness. Be sure to clean the rope before adding new lubricant.

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Construction News From Washington

Washington, D.C.
August, 1960

Public Works to Rise Next Year

A substantial increase in construction of public works looks like a sure bet for next year no matter which party captures the White House. The boost will be bigger if the Democrats win, but there is nothing small about the lift that a Republican administration will give to public works.

A revealing foretaste of what 1961 holds in store will be laid before the country in the next few weeks. The Democratic nominees, Senators Kennedy and Johnson, have come back to Washington with a united purpose to complete the passage of pending legislation that will stimulate home building, help distressed areas, aid the construction of schools, and strengthen the nation's program of natural resources development with a goodly number of new construction starts in the current fiscal year.

Some of these prescriptions the President may take with less distaste if the Democrats melt down and remold conflicting or vetoed versions—on school construction, housing, and area development—into forms that partially fit Administration specifications. The Republican standard bearer has been trying to soften White House opposition to school construction aid, and he may exert his leadership and influence in favor of depressed areas and housing as well, provided the final bills show some tolerance for the President's hard-held positions on these issues.

For both parties, however, the next few weeks will give only a sample of changes that won't become fully effective until after Jan. 20. Republicans in moderate measure, and Democrats in vigorous fashion, plan to step up construction of public works for economic development of the country. Both parties, too, would give additional impetus to construction through a speedup of military building, with the acceleration coming faster under the Democrats than under the GOP.

Republicans tend to rely on the party's traditional local-government approach to public works. Under this philosophy, the prime responsibility for financing and building public improvements is left with the states and local jurisdictions. The federal government supplies the stimulus of technical assistance and planning advice, plus federal financial support roughly in proportion to the national interest involved.

Democrats have little patience with this big-brother attitude. They favor a direct, paternalistic policy by the central government.

Prodding of the smaller members during the last eight years has not produced new public works rapidly enough to keep pace with U.S. needs and U.S. potentials, as the Democrats see them.

The Democratic platform makes the party's purpose plain. If given the power, the party nominees will use their executive leadership to speed the buildup of greater military strength and to spur the growth of the nation's economy through construction of federal and federally-assisted public works. A growth rate averaging less than 3% a year during the last eight years is only about half what the nation should be doing, the party declares. As a target, the campaign document sets up an average increase of 5% a year for gross national product in future years.

Republicans likewise espouse a bigger and brighter future, but in smaller increments. With them, public works would expand also, but not quite so rapidly and with less direct impetus from Washington.

More Missile Base Work for Constructors

Construction contractors and the U.S. Air Force are well on their way to working out an Air Force procurement policy that will give more work on missile bases to construction firms and less to missile manufacturers.

Missile makers, under their old-style Air Force prime contracts, have been performing many construction jobs connected with the installation of the weapons and the control and operating equipment at squadron sites. A number of these on-site tasks have been plainly of the kind normally performed by construction crews rather than by the industrial employees of manufacturers. The encroachment was so obvious that the Labor Dept. early this year notified the Air Force of what it had observed, coupled with a reminder that the workers performing these construction jobs are entitled to be paid prevailing craft wages under the Davis-Bacon Act. At some sites, work stoppages have resulted from picketing by construction trades that had been displaced by industrial unions from the manufacturing plants of the missile makers.

Worried about the muddle, representatives of the Associated General Contractors and the Council of Mechanical Specialty Contracting Industries approached the Air Force in April to help speed up lagging missile base construction. Last month the Air Force asked its procurement policy makers to redraft their missile supplier and construction contractor rules in a way that would eliminate the jurisdictional overlap.

At the same time, the Labor Dept. was on the last lap of preparing a regulation that would distinguish construction work from the weapons work on missile bases. No date is set for final decision, but the contractors hope for final determinations by both Labor and the Air Force within a month.

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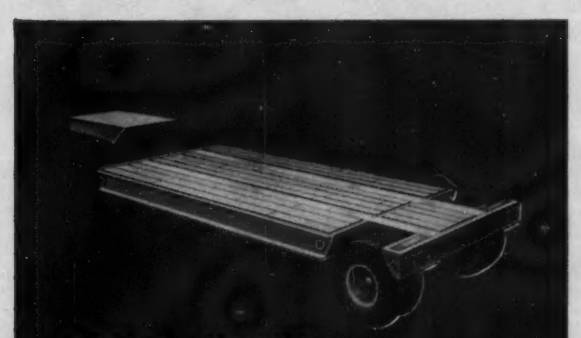
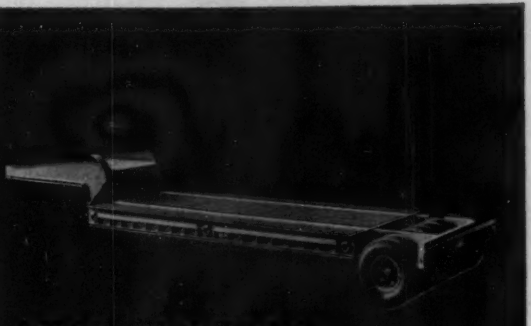


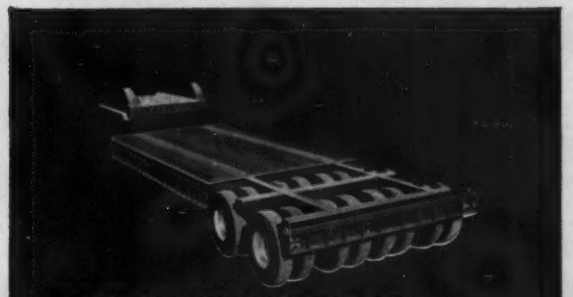
MODEL FS . . . 10 and 15 tons
This unit is available in level platform and drop platform models with a 16' platform between gooseneck and wheels. It is well suited for relatively light construction equipment or hauling items with great bulk but not too much weight.



MODEL F . . . 15, 20, 25 and 30 tons
This unit is a heavy-duty, short-overall-length Low-Bed with maximum deck length. It is available in level and drop-deck types and meets the requirements for operation in states that permit 15 to 30 ton loads on a single 8-tires-in-line axle.

MODEL ZP . . . 15, 20, 25, 30 and 35 tons
This model has the strength for most all heavy-duty hauling jobs. It is available in level or drop-deck types with a wide range of specifications and provides the carrier with a tandem axle trailer for top capacity payloads. Tandem rocking beams distribute loads equally between axles.

MODEL FZP . . . 20, 25, 30 and 35 tons
This unit, with low, flat-top gooseneck, beavertail, and hinged loading ramps, provides for easy loading and unloading where a high capacity tandem axle trailer is required. It is particularly suited for handling winch-loaded equipment and crawler-track vehicles.



MODEL FC . . . 45, 50, 60 and 75 tons
FC trailers are heavy-duty, extra wide units available in level or drop-deck types. They are designed to handle exceptionally heavy equipment such as transformers, power generating units, steel building sections, etc. They require special permits for over-the-road operation.

Send for booklet

TRAILMOBILE INC.
CINCINNATI 9, OHIO

Please send me a folder describing your complete line of Low-Bed trailers.

Name_____

Company_____

Street_____

City_____ State_____

announcing
NEW MARIONS
MARION POWER SHOVEL COMPANY
A Division of Universal Marion Corporation

MODEL	SHOVEL (CU. YDS.)	BACKHOE (CU. YDS.)	CRAWLER CRANE CAPACITY (TONS)	PCSA RATING
45-M	1¼	1¼	30	10-102
47-M	*	1¼	40	12-141
65-M	1½	1½-1¾	50	12-165
75-M	1¾	2-2¼	60	12-204
77-M	*	2-2¼	75	12-278

*Not Available as a Shovel.

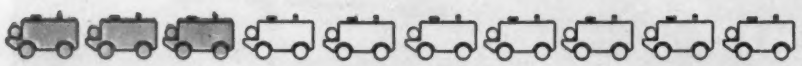
Now — power-packed and ready to go, you'll find this new series of Marion machines offer the versatility in range and capacity to fit your specific needs. New! From the ground up! Major excavator design improvements that let you "custom-select" standard and optional features as they are needed. And, they can be added or removed on the job site! 13 different front end combinations . . . 4 different power and transmission arrangements . . . and a host of work-saving optional features combine to do swift justice to any of your job requirements, from a simple trenching operation to a multi-million dollar highway project. In league with six other basic models in Marion's contractor line, you'll find dipper ratings from ¾ to 5 cubic yards . . . crane capacities from 15 to 100 tons. Which Marion is best for your job? You can get a ready answer from your nearest Marion distributor.

"the fastest growing line in the industry"

Marion, Ohio, U.S.A. **MARION**

New Blue Brute drilling team—Worthington Blue Brute 900' rotary compressor with over/under design operates two Blue Brute crawler-mounted 4½" drills.

Why your next 900′ compressor will

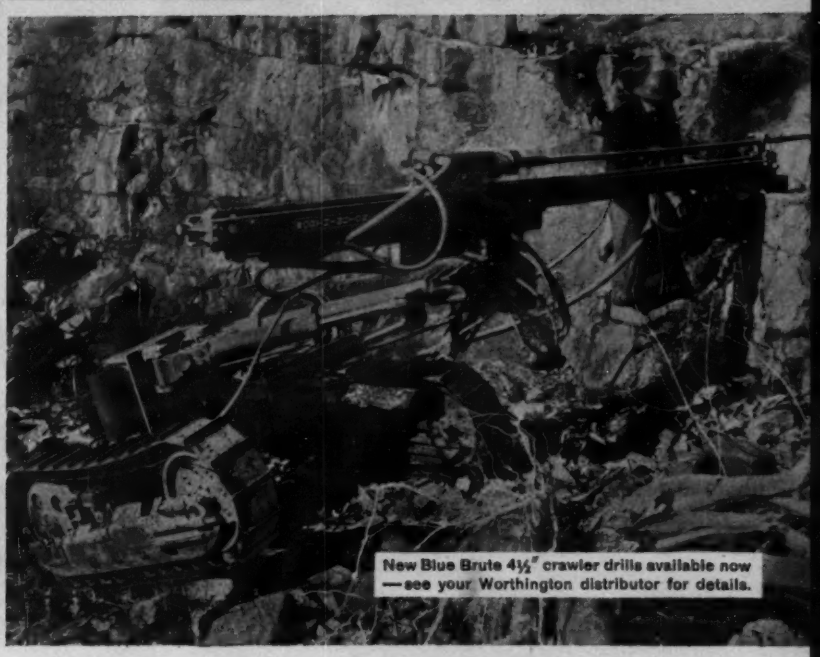


Most manufacturers build their small rotary compressors with end-to-end design. Only 3 out of 10 produced use over/under construction (shown in blue)...

Yet in the 900' size, more over/under units are sold than any other. The story opposite tells why...

If you looked inside every rotary compressor on the market you would find one major difference that separates the men from the boys.

A few manufacturers build their rotaries with over/under design: i.e. the compressor's second stage is directly underneath the first. This results in an improved rotary with many benefits. The cylinders are self-draining (this stops clogging) and easy to get at for repairs. All principal parts can be re-



most likely have OVER/UNDER design

moved for inspection and replaced in a hurry.

The superiority of over/under design is indicated by the fact that in the largest, most expensive size (the 900′ unit) *more over/under rotaries are bought than any other kind.* Yes, it takes over/under design to handle heavy jobs, such as operating *two* Worthington 4½″ Blue Brute drills which get maximum drilling footage with least air consumption and less maintenance.

Worthington is one of the few manufacturers that offer over/under design in every compressor in its line. Worthington Blue Brute rotaries made with over/under design are built in 125′, 210′, 315′, 365′, 600′ and 900′ sizes. (A single-stage 85′ rotary is also available.) There's a complete line of Blue Brute drills, too—right through the 4½″ size. Ask your nearby Blue Brute distributor for a demonstration. You'll find him in the Yellow Pages under "compressors." Or write Worthington Corporation, Dept. 60-24, Holyoke, Mass. In Canada: Worthington (Canada). Ltd., Brantford, Ontario.

WORTHINGTON

NEW EXPANDED LINE . . .

FINEST MOTOR GRADERS MONEY CAN BUY!

Now choose from 9 Austin-Western models to match weight and power needs for any job—16,000 to 30,000 lbs., 102 to 165 hp

Austin-Western motor graders are designed and built to do more different kinds of work faster, and more profitably for *you*, than any other grader of comparable weight and horsepower! We can prove this.

Available in 4-wheel Pacer or 6-wheel Super series. The A-W line features exclusive A-W all-wheel drive and all-wheel steering for unequalled power, precision and maneuverability.

Bulldozer, scarifier, V-plow and wing, reversible plow and roller attachments also available.

Get all the facts and figures on the Power Graders that pay big dividends day after day—year after year. See your Austin-Western distributor or write us.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

BALDWIN BLH LIMA-HAMILTON

Completely portable Lima A-W crushing installation has primary 20 by 36-in. jaw crusher, Model 101-CE secondary plant and 7-yd. surge bin. Delivers exceptionally high production for Maymead Lime Co. in Tennessee.

How Lima Austin-Westerns BEAT RISING COSTS!

Higher output, lower maintenance. These two cost reducers are characteristic of Lima Austin-Western Crushing, Screening and Washing equipment.

Advanced engineering design assures top operating efficiency for years—free of maintenance problems and costly downtime. Improved manufacturing processes and extensive use of anti-friction bearings and heat-treated alloy steels also add to the dependability of this rugged, precision-built machinery.

Lima A-W offers a complete crushing, screening and washing line including jaw and roll crushers, matching screens, conveyors and bins. Stop increasing costs; learn how Lima Austin-Western meets your exact needs for low-cost, accurately sized specification materials. See your nearby distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Lima Austin-Westerns available for stationary or portable installation.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

607

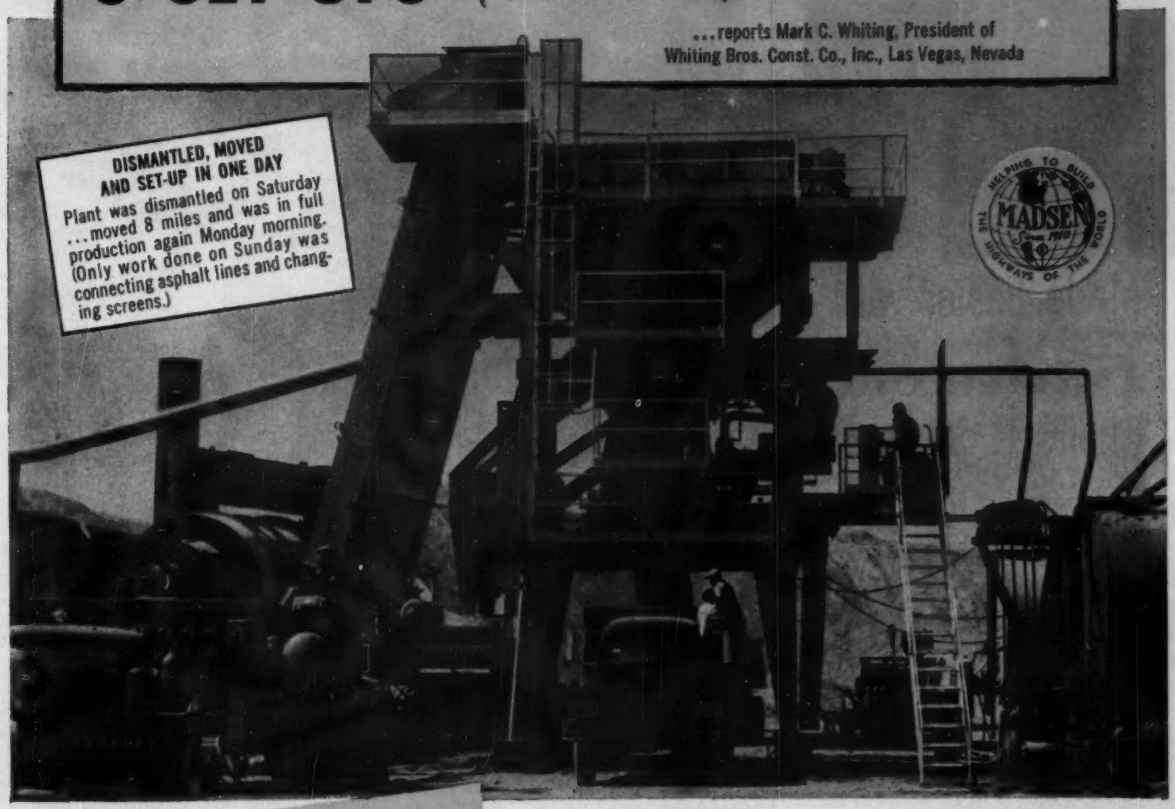
240 TONS PER HOUR!

243,000 TONS IN 9 MONTHS!

6 "SET-UPS"

5 State jobs and 1 City job required 6 different plant "set-ups."
Distances between "set-ups" varied from 8 miles to 540 miles.

...reports Mark C. Whiting, President of
Whiting Bros. Const. Co., Inc., Las Vegas, Nevada


DISMANTLED, MOVED AND SET-UP IN ONE DAY
Plant was dismantled on Saturday ...moved 8 miles and was in full production again Monday morning. (Only work done on Sunday was connecting asphalt lines and changing screens.)
HELPING TO BUILD THE HIGHWAYS OF THE WORLD
MADSEN
Since 1910

the Contractor...
WHITING BROS. CONST. CO., INC.
the Asphalt Plant...
MADSEN
MODEL 481 5000-LB. PLANT

Figures like these tell a story.

They indicate the tremendous output of the MADSEN Model 481 5000-lb. Asphalt Plant over a period of months on various Federal and State Specification mixes... the kind of day-in and day-out tonnage that builds owner profits.

They tell of the easy, low-cost maintenance and economical operation of the MADSEN Model 481. (Downtime in the 9 months period was only 12 hours.)

They show how the unit construction of the MADSEN Model 481 pays off in ease of portability and fast, easy set up and dismantling.

And most important, they show that the MADSEN Model 481 Asphalt Plant gives you the advantages you need to make greater profits in today's fast-moving asphalt mixing business. Check with your MADSEN Distributor today.

MADSEN Equipment that Serves

1910 • 1960 50 YEARS—SERVING INDUSTRY

MADSEN WORKS
Construction Equipment Division
BALDWIN-LIMA-HAMILTON CORPORATION
P.O. BOX 38, La Mirada, California

BLH BALDWIN LIMA HAMILTON

MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio

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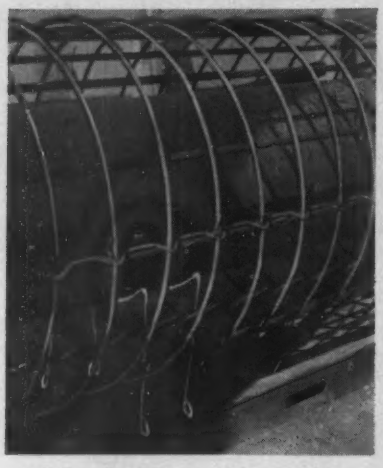
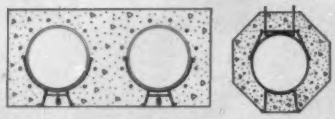
MADSEN PRODUCTS

ASPHALT PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTORS • ROAD PUG TRAVEL MIX PLANTS • WEIGH BATCHERS • DUST WASHERS • FEED BUNKERS FEED TUNNELS • ASPHALT TANKS • ASPHALT & FUEL PUMP UNITS • CONCRETE FLOAT FINISHERS FOR AIRPORTS AND HIGHWAYS • HIGHWAY-AIRPORT BASE STABILIZER PLANTS

PRESTRESSING
Beams & Piles



Made Easier with
Richmond
Chairs & Spacers



Chairs for support and hold-down of Sonovoid tubing in prestressed beams and piles

Spacers for spirals of prestressed piles

The rapidly increasing use of prestressed concrete has created the need for a variety of products in its preparation and application. Richmond, with the know-how gained through 49 years experience in the concrete construction field, has developed a full line of supports, strand deflectors, spacers, lifting inserts, anchors and fasteners designed for fast, safe and economical use.

For more information, about these and other Richmond products for prestressed concrete, send for our free Bulletin No. 11 *—and, if you have any specific concreting problems, ask us about them. Write to:—*

Richmond
SCREW ANCHOR CO., INC.
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...AND BE SURE IT'S RICHMOND

Main Office: 816-838 LIBERTY AVE., BROOKLYN 8, N. Y. Plants & Sales Offices: Atlanta, Georgia • Ft. Worth, Texas • St. Joseph, Missouri • **In Canada:** ACROW-RICHMOND LTD., Orangeville, Ontario.

Job Talk...

Hydraulic Rig Digs Out Clay Pockets

Separating the peas from the pods is a laborious job when done by hand. To get out of a similar difficulty the Williston Shellrock Co. of Ocala, Fla., turned to mechanization to speed digging out of clay pockets pitted through the layers of limerock in their mines.

Williston bought a Warner-Swasey Hopto machine to remove the clay from the limerock and make it acceptable as a base material for paved roads and runways. The clay pockets range from a foot or so up to several feet in diameter and are often as much as 20 ft deep. The clay must be removed in order to meet specifications requiring that base material be 95% calcium and magnesuim carbonate, with the remainder perferably sand rather than clay.

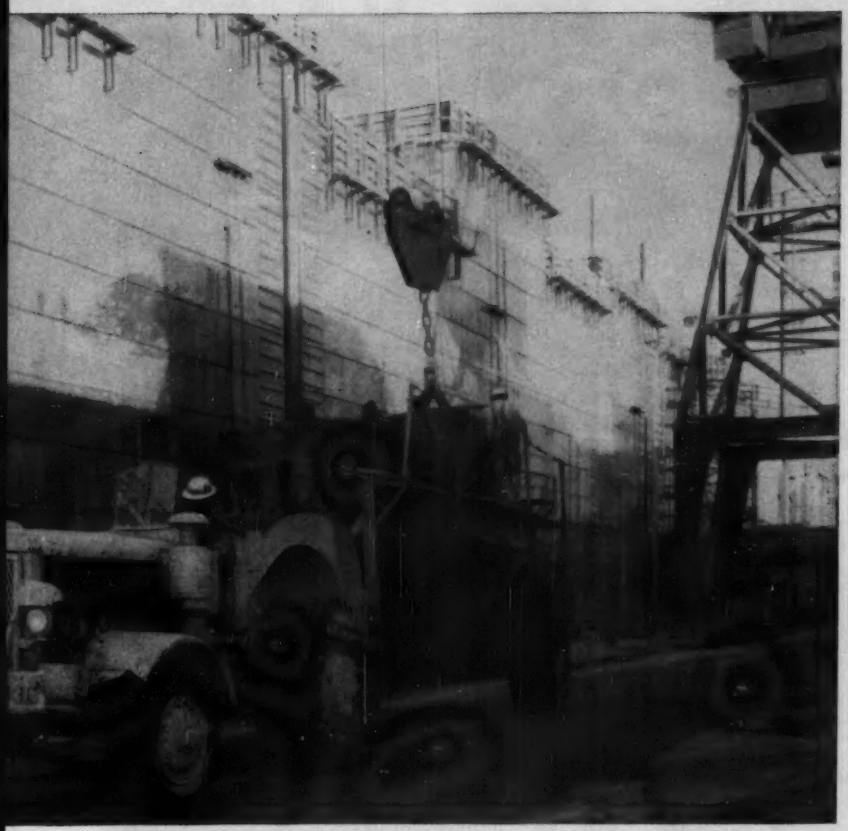
The Hopto machine lends itself readily to efficient vertical spot-mining techniques. The completely hydraulic clamshell with which the machine is equipped is mounted rigidly to the dipper stick. The rigid mounting gives the operator positive control of the grapple, eliminating the need for tag lines or a man on the ground to guide the bucket. And it also enables the operator to use positive down-pressure to push both halves of the clam deep into the clay, insuring a full load at each pass. A hydraulic mechanism allows the operator to rotate the bucket through 240 deg.

At a joint-venture mine near O'Brien, Fla., where the Hopto is currently working, a 1-yd Link-Belt dragline removes the 4-ft-thick layer of overburden covering the limerock. The Hopto comes along right behind the dragline, cleaning out the clay pockets. It loads a 10-yd scraper pulled by an Allis-Chalmers HD-6 tractor in about 30 min. After the clay pockets are cleaned out, a tractor equipped with a ripper loosens the rock and shoves the material into a stockpile with its dozer blade. Another dragline charges a portable crusher that reduces the limerock.

One of the leading producers of limerock in the state, the Williston outfit operates three permanent mines and frequently opens up mines near job locations. The rubber-tired Hopto rig is ideal for them because it can move quickly from one location to another. It can also be put to work as a backhoe with their sister organization, the Craggs Construction Co.

continued on page 27

B.F.Goodrich helps change the face of a river



40 TONS OF CONCRETE ride to the bottom of Barkley Lock on B.F.Goodrich Rock Service tires. These gigantic tires (over 6 feet high) are built with B.F.Goodrich Flex-Rite Nylon cords that withstand double the impact of ordinary materials, resist heat blowouts and flex breaks. The new B.F.Goodrich Cut Protected tread compound guards against the kind of severe rock cuts and chipping found on such projects as Barkley Lock.

Hundreds of B.F.Goodrich tires—and other products—speed development of Cumberland River Basin

TWENTY-FOUR miles east of Paducah, Kentucky, they're changing the face of the Cumberland River. Here Barkley Dam will rise to a height of 155 feet, forming 62,000-acre Lake Barkley—key units in the development of the Cumberland River Basin.

This $182-million project (including construction of a lock, power plant and canal) will provide flood control, improve navigation and produce 600-million kilowatt-hours of energy a year. The completed lock will have a chamber 110′ x 800′ and a lift of 52′ to 57′. Five outmoded locks will be eliminated.

On the job: Tecon Corporation, general contractors of Dallas, Texas, who have chosen B.F.Goodrich tires, industrial products, protective clothing and footwear 100%. BFG Special Contractor's Representatives work hand-in-glove with Tecon on all phases of Barkley Construction.

This B.F.Goodrich report continues ▶

Wherever you look at Barkley Dam you'll see B.F.Goodrich tires on the job

HELPING Tecon Corporation meet the challenges of the $182-million Barkley Dam project are a corps of B.F.Goodrich on-the-scene specialists and scores of different B.F.Goodrich products.

Giant BFG Rock Service tires haul concrete and rock. Rock Logger tires deliver fly ash. B.F.Goodrich All-Purpose tires support a "cement hog." Traction Express and Power Express tires bring in supplies. Power Grader and Universal tires move earth.

This is only the beginning. You'll find B.F.Goodrich hose delivering air, water, even dry cement. BFG V-belts drive pumps, crushers and vibrator screens. Conveyor belts carry sand and aggregate. And the 700 Tecon men on the project wear B.F.Goodrich protective clothing and footwear.

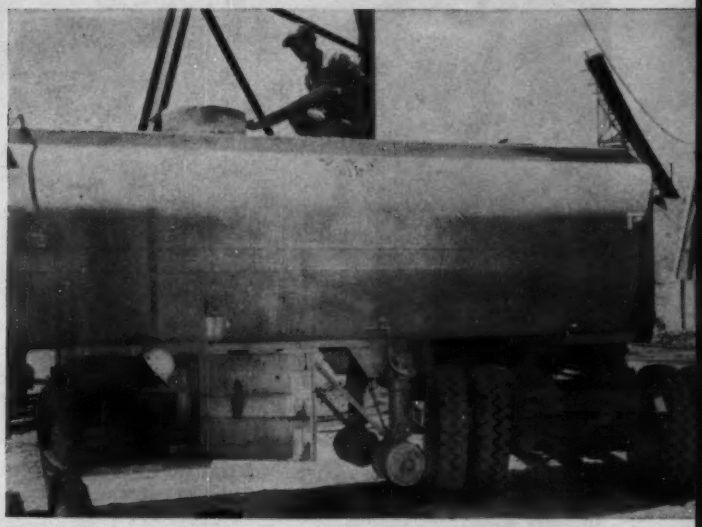
To keep the whole job humming, B.F.Goodrich provides special maintenance and service facilities, all part of the new B.F.Goodrich Unified Contractor Program. If *you* want to cut the cost of doing business, it will pay you to talk to B.F.Goodrich. Your Smileage dealer is listed in the Yellow Pages. Or write *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich Smileage!

AT BARKLEY LOCK, workman rough up concrete surface for new pour. BFG hose carries air and water under high pressure. Yellow rainsuits and footwear protect men. B.F.Goodrich Unified Contractor Program provides Tecon with everything from tires to boots to belts.

CONSTANT TIRE INSPECTION by B.F.Goodrich on-the-job service men avoids delays, lowers operating costs. Servicemobile is equipped with all the latest power tools. Complete stock in B.F.Goodrich Tire Service Building (built for this project) includes BFG batteries used in all Tecon motorized equipment.



SPECIALLY BUILT TANK TRUCK delivers 30 tons of fly ash. Tecon Corp. chose rugged B.F.Goodrich Rock Logger tires because the extra-thick tread defies rock cuts, gives positive traction in forward or reverse. 125 pieces of equipment work on Barkley Dam which will have an overall length of 10,020 feet.

◀ **24 HOURS A DAY, 6 DAYS A WEEK,** trucks haul tons of rock out of Barkley Dam excavation. Haul roads are steep and strewn with abrasive rock. Yet B.F.Goodrich Rock Service tires are so rugged that many actually can be retreaded up to 3 times on this operation. Note BFG Servicemobile, at work as usual.

B. F. GOODRICH CONVEYOR BELTS AND HOSE arrive at Barkley Dam on tractor-trailer equipped with Power Express and Traction Express tires. (Users call the Traction Express the "100,000-mile tire.")

B. F. GOODRICH ALL-PURPOSE TIRES (as at home in the rough as on the highway) give mobility to "cement hog" that carries dry cement to batch plant. BFG contractor's program helps Tecon simplify purchasing, eliminate confusion, cut equipment and operating costs.

OFF-THE-ROAD TIRES BY B.F.Goodrich

ENGINEER'S FIELD REPORT

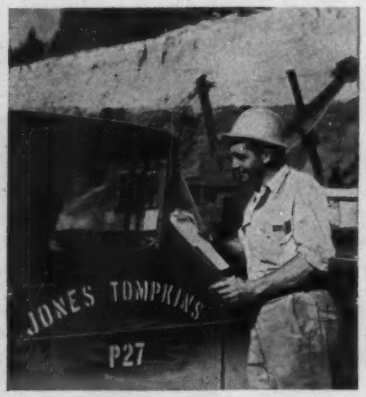
PRODUCT: CHEVRON PRESSURE PRIMER SYSTEM

FIRM: JONES-TOMKINS CO. Cougar, Washington

Special cartridge fires giant diesel in seconds

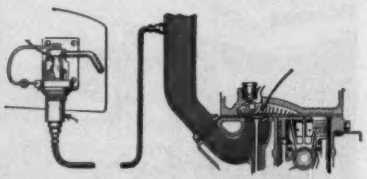
At world's highest earth-filled dam construction site near Woodland, Washington, three giant diesel shovels get immediate starts from Chevron Pressure Primer System, reports Jones-Tomkins, general contractors. System helps speed shovel's fill-borrowing operations for this $51,000,000 project.

Five-year-old 4500 Manitowoc Speed Crane (above), powered by Caterpillar 350 h.p. V-12 D397 engine, operates 18 hours a day, six days a week, loading 21-yard dump trucks in just 70 seconds. Jones-Tomkins uses Standard fuels and lubricants exclusively on this job.



Chevron Pressure Primer Discharger mounted on instrument panel (left) operates satisfactorily despite heavy vibration, reports shovel foreman Henry Watson (right). "We've had absolutely no trouble with this system. The Chevron Pressure Primer System eliminates dust clogging and allows fluid to reach the cylinders quickly. It's the practical way we've found to get these rigs going."

Why Chevron Pressure Primer System assures fast starts



- Volatile Chevron Priming Fuel atomizes in induction system at all temperatures even at −65°F, no hand-pumping required.
- Pressure or weakest spark from engine fires mixture.
- Simple rugged air-tight discharger prevents Priming Fuel leakage.
- Small, fireproof, pressurized steel cartridges protect Priming Fuel from water and dirt.

For More Information or the name of your nearest distributor, write or call any of the companies listed.

CHEVRON

TRADEMARKS "CHEVRON" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20

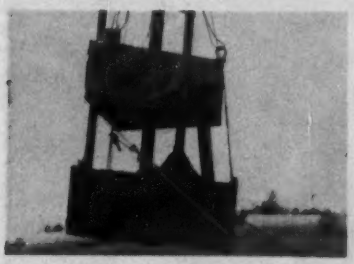
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

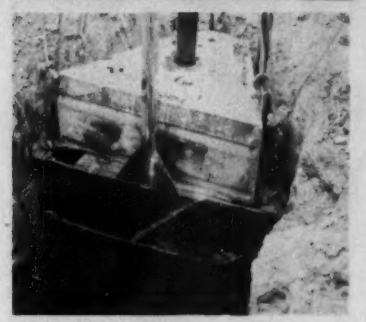
STANDARD OIL COMPANY OF TEXAS, El Paso

THE CALIFORNIA COMPANY, Denver 1, Colorado

JOB TALK . . .

continued from page 22





Cookie-Cutter Chops Holes for Pipe Saddle

An ingenious device for cutting holes in sticky clay alongside 19-ft-dia concrete pipe sections makes installation of seepage collars at Oologah Dam in Oklahoma much easier than might be expected.

J. A. Jones Construction Co. built a king-size cookie-cutter to do the trick. It consists of a 2-ft-high cutting edge welded to the bottom of a steel frame that serves as guides for a steel box containing weights totaling 5,000 lb. The entire assembly hangs from the hook of a crane. The crane operator centers the frame and, by raising and dropping the weighted box, drives the cutting edge into the ground. When it has penetrated 2 ft, the device is raised, bringing a slug of clay with it.

The cutting edge chops out an almost triangular hole measuring about 5 ft wide and tapering from 6 ft at the pipe to 2 ft on the outside. Maximum depth of the holes to the underlying shale is 23 ft. Dropping the weighted box on the lower section is ordinarily enough to knock loose the material held by the cookie-cutter after each bite. When the material sticks, a short tee iron placed beneath the hammer pushes it out.

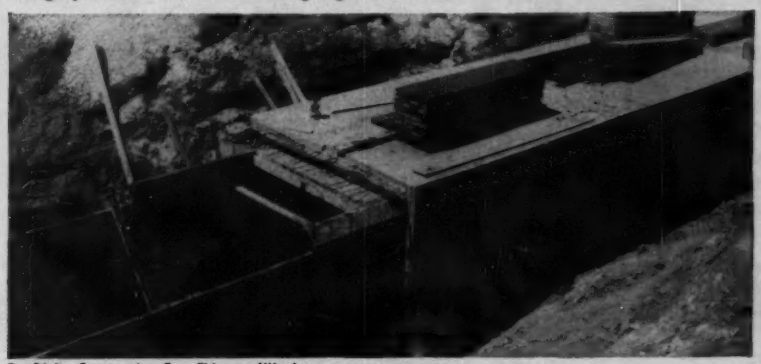
When holes have been dug down to shale on both sides of the

continued on page 32

BETTER ROADS with Symons Forms

Tonn and Blank, Inc., Michigan City, Indiana

Bridge . . . Symons standard prefab panels were ganged for arched girders on bridge job. Contractor used 28 ganged sections.



Orr-Divito Construction Co., Chicago, Illinois

Culvert . . . Walls and slabs varied in thickness from 10 to 18". Outside height was 10½' and inside dimensions were 8½' wide by 7½' high.

R. B. Potashnick & J. S. Alberici Const. Co., St. Louis, Mo.

Retaining Wall . . . Double battered. 12" at top and 3' at base. Heights varied from 4' to 34'. Forms also used to pour footings, abutments, piers and beams.

Symons can help you with your road building problems. Our engineers will prepare complete form layouts and bill of materials. Symons Forms may be rented with purchase option—rentals to apply on purchase price. Information on Symons Steel-Ply Forms sent *free* on request.

Symons CLAMP & MFG. CO.

4255 Diversey Avenue Dept. H-O Chicago 39, Illinois

Warehouses throughout the U.S.A.

MORE **SAVINGS** FROM **SYMONS**

Where heavyweights move job records prove...

FIRESTONE TIRES KEEP BIG WHEELS TURNING!

Look to Firestone to help keep big wheels turning—to keep the cycle going and the project moving smoothly toward your finish date! That's because Firestone off-the-highway tires have built-in toughness to take rugged abuse and reduce your downtime. Shock-Fortified nylon cord, for example, guards against impact damage. And Firestone Rubber-X, the longest-wearing rubber ever used in Firestone off-the-highway tires, provides a big payoff in extra service hours. Investigate Firestone's Giant Tire Service for tires and maintenance matched to every need of every project on your docket. Call your Firestone Dealer or Store. Or write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Co., Akron, Ohio.

ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT

Super Rock Grip Wide Base* Super Rock Grip Deep Tread*

TUBELESS OR TUBED

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1960, The Firestone Tire & Rubber Co.
*Firestone T.M.

Unretouched photo of concrete barrier taken last spring following a severe winter.

White concrete center barriers: new safety for existing roads

This concrete center barrier on Route U.S. 46, New Jersey, has been successful in preventing head-on collisions on this heavily traveled approach to the George Washington Bridge. Cast in place with ATLAS WHITE portland cement, the barrier is 32 inches high, 24 inches wide at the base, with sloping sides. This design minimizes the possibility of vehicles mounting the barrier and helps shield oncoming headlights. This construction has become an important feature in New Jersey's program to build safety into existing highways where the installation of center islands is impractical.

ATLAS WHITE air-entraining portland cement was specified for the concrete in this installation because its uniform whiteness provided contrast between barrier and the darker pavement. And at night, this contrast is even more apparent. In addition, the air-entraining property of this cement also provides a more durable concrete that resists the destructive effects of freezing-thawing weather and the application of deicing salts. For more information on white portland cement, write Universal Atlas, 100 Park Avenue, New York 17, New York.

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

CB-89

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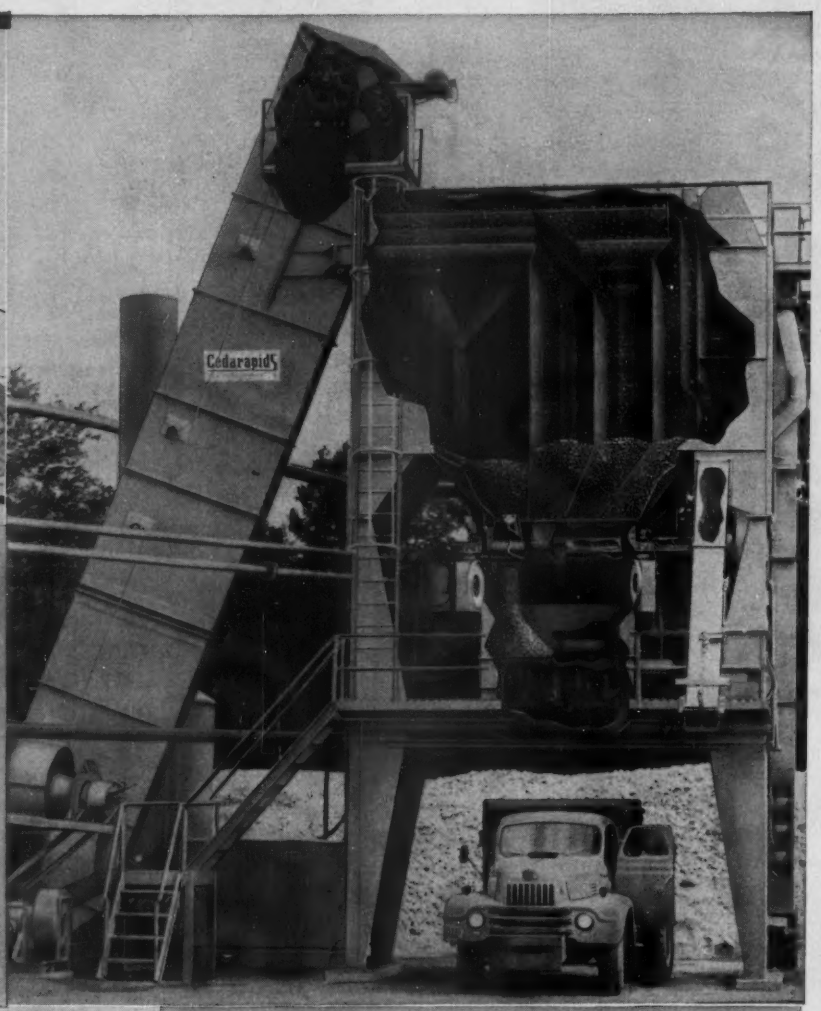
Universal Atlas Cement
Division of
United States Steel

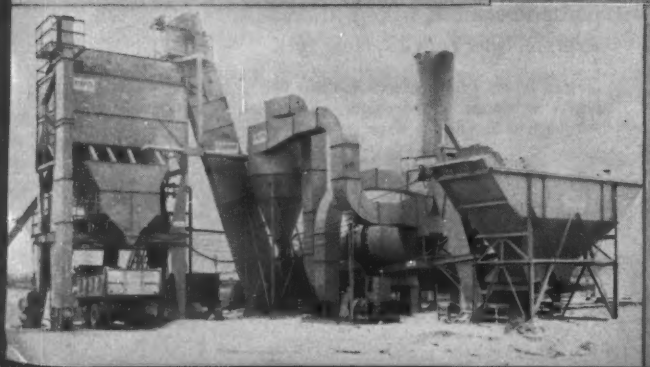
USS

The 4th CEDARAPIDS ASPHALT PLANT for ADAMS CONSTRUCTION CO.



100% portable Model G-Unit Plants have the only truly self-erecting mechanism available to raise "packaged" sections, complete with running gear, into position. Three G-Unit models meet your big-job needs, cut between-job delays.

Cedarapids Portable G-Unit Plants and all five models of H-Unit Stack-Up Plants are packed with profit-benefits that reduce your cost per ton. You'll see some in the cut-away drawing. Ask your Cedarapids Dealer to describe the many others, including the All-Automatic Controls that speed operation to give you two or three extra batches per hour, with no additional maintenance or operating cost.



Model H-Unit stack-up design, with self-contained "packaged" sections that are quickly and easily handled by crane, reduces your initial investment to save money right from the start. Sections can be equipped with running gear if moving becomes frequent. And there's a size to meet every capacity requirement, from 1500-lb. to 7500-lb. batches. Whatever type or size plant you need, you can depend on Cedarapids engineering in every model to cut your cost per ton.

"Low upkeep costs and ease of maintenance, plus the ability to handle large tonnages, make Cedarapids my favorite," says Stuart Adams

Eleven years ago Mr. Stuart Adams started producing asphaltic concrete and crushed stone with Cedarapids equipment. Today this successful and experienced producer still orders and reorders Cedarapids Plants for his Adams Construction Co. and Levisa Stone Co. in Paintsville, Kentucky. His *fourth* Cedarapids Asphalt Plant is a stationary Model H60 which is producing up to 240 tons per hour.

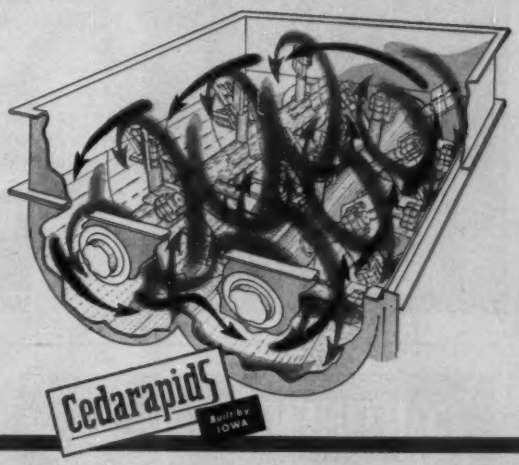
Mr. Adams' statement quoted above also applies to his Cedarapids Bituminous Paver, Stabilized Base Mixer, and his many Cedarapids-equipped aggregate plants in Kentucky.

When *your* market calls for big tonnages of asphaltic concrete produced at low cost per ton, be sure to investigate (and compare) all the profit-benefits Cedarapids engineers into every plant in the complete line. Ask your Cedarapids Dealer about the right size and type of plant for your needs.

Cedarapids engineered for lowest cost per ton

Long, wide mixer for extra capacity

The Cedarapids pugmill mixer is the heart of your plant. Its wide, long body handles larger batches and its design makes a "shallow" batch which requires less power. There is plenty of space above the shafts through which the bitumen and aggregate are carried, while the spiral pattern of the paddles assures fast and efficient mixing. Material is thoroughly stirred and intermixed into a completely coated homogeneous mass. There is no compaction of materials under shafts or paddles.



A Cedarapids Bituminous Paver will increase your profit potential. Its high-speed operation, steady-production dependability, and low maintenance costs have been proved on highway and airport jobs all over the country.

IOWA MANUFACTURING CO.
Cedar Rapids, Iowa

Send for these Bulletins

Whether you need portable plants for fast-moving Interstate jobs, or stationary plants for localized markets, these two bulletins contain valuable information about all Cedarapids batch-type models, including production-balanced accessory equipment.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Gentlemen: Please send the literature checked.

☐ Bulletin AP-26 (Portable G-Unit Plants) ☐ Bituminous Pavers

☐ Bulletin AP-27 (Stack-Up H-Unit Plants) ☐ Aggregate Plants

Name_____

Company_____

Address_____

City_____ State_____

5460N

ALL-NEW HEAVY-DUTY BREAKER

From throttle to tool retainer, this 80 lb. class Worthington Blu-Brute paving breaker is all-new. It takes both spike and sheeting driver. And it's designed to give faster breaking with better operator control and less maintenance.

How? There's more than a dozen improved design features. They range from an easy operating progressive throttle valve to simplify starting moils through to a renewable front head bushing for low cost replacement of the wearing part of the chuck housing. Other features mean less operator fatigue . . . for example, the extended "steel run."

In addition, the WB-82 wears better because of the exclusive Worthington process: Blu-Coated parts.

The Blu-Brute paving breaker line is complete from the 20 through 80 lb. classes. See your nearest Worthington distributor for more information about the new WB-82. Or request bulletin from Worthington Corporation, Dept. 60-28, Holyoke, Massachusetts.

WORTHINGTON

CONTINENTAL RED SEALS ARE ENGINEERED TO FIT THE JOB

Rarely will you find an item of industrial, construction or road building equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to the work to be done. Whatever the machine . . . whatever its job . . . you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.

Continental's ruggedness and rightness of design are helping to build prestige for more and more of the leading builders of specialized power equipment. It's wise when buying equipment of this type, to choose a make with dependable Red Seal power—power backed by specialized experience dating from 1902.

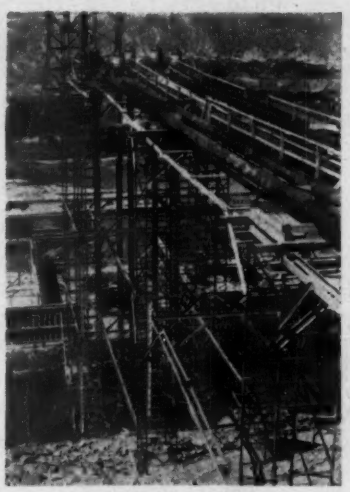
SERVICE AND PARTS AVAILABLE EVERYWHERE

Continental Motors Corporation
MUSKEGON • MICHIGAN

JOB TALK . . .

continued from page 27

pipe, crews pour concrete into the holes and carry the concrete over the top of the pipe to make a saddle. The sides of the holes are so clean-cut and straight that no forms are required. Another break was that no men had to work in the hole during the entire operation.



Pumps Handle Seepage, Empty Flooded Cofferdam

A battery of six electrically driven pumps does double duty for Groves Ventures, Inc., of Minneapolis, Minn., at the Captain Anthony Meldhal Lock and Dam job on the Ohio River. During most of the year the pumps handel seepage of river water into the cofferdam, which was built under another contract. But in the spring they dewater the cofferdam after the flood season has run its course, getting the job back in the dry. Each spring the contractor deliberately floods the cofferdam to prevent failure of the structure when the river goes on its annual rampage.

Towers of Waco Hi-Load steel shoring hold the pumps 75 ft above the bottom of the cofferdam. That's high enough to put them above flood stage. Load on the towers approaches 60,000 lb when the six 14-in. discharge lines are included with the weight of the pumps, which are 14-in. Fairbanks Morse units powered by 150-hp electric motors. The pumps are capable of delivering 5,000 gpm at a head of 102 ft. A 134-ft-long platform running along the top of the towers provides access to the pumps.

THEY USED IT HERE . . . *Bethlehem steel beams and columns, joists, and Slabform were chosen for Guidera & Goodman's 11-story Hackensack apartment after careful analysis of costs. From left to right: John Guidera, Ralph Solow, Dan Reed, and Leo Goodman. Erwin Gerber is the architect.*

HERE'S WHY NEW JERSEY APARTMENT BUILDER SAYS:

Steel construction saves time for the contractor

BECAUSE THEY LIKED IT HERE . . . *River View Towers, attractive, steel-framed apartment in Fort Lee, N. J., has balcony views of the George Washington Bridge.*

For the 10-story River View Towers in Fort Lee, N. J., Guidera & Goodman of Englewood used steel all the way up—steel frame, open-web joists, solid steel centering (Bethlehem Slabform).

"Steel gave us complete maneuverability," said the builders. "No schedule delays, no waiting for good weather, no formwork. We knew which crews to schedule and when. No lost time sitting around."

And after careful cost analysis, and comparison with other materials, Guidera & Goodman scheduled their new 11-story Hackensack apartment for the same steel construction.

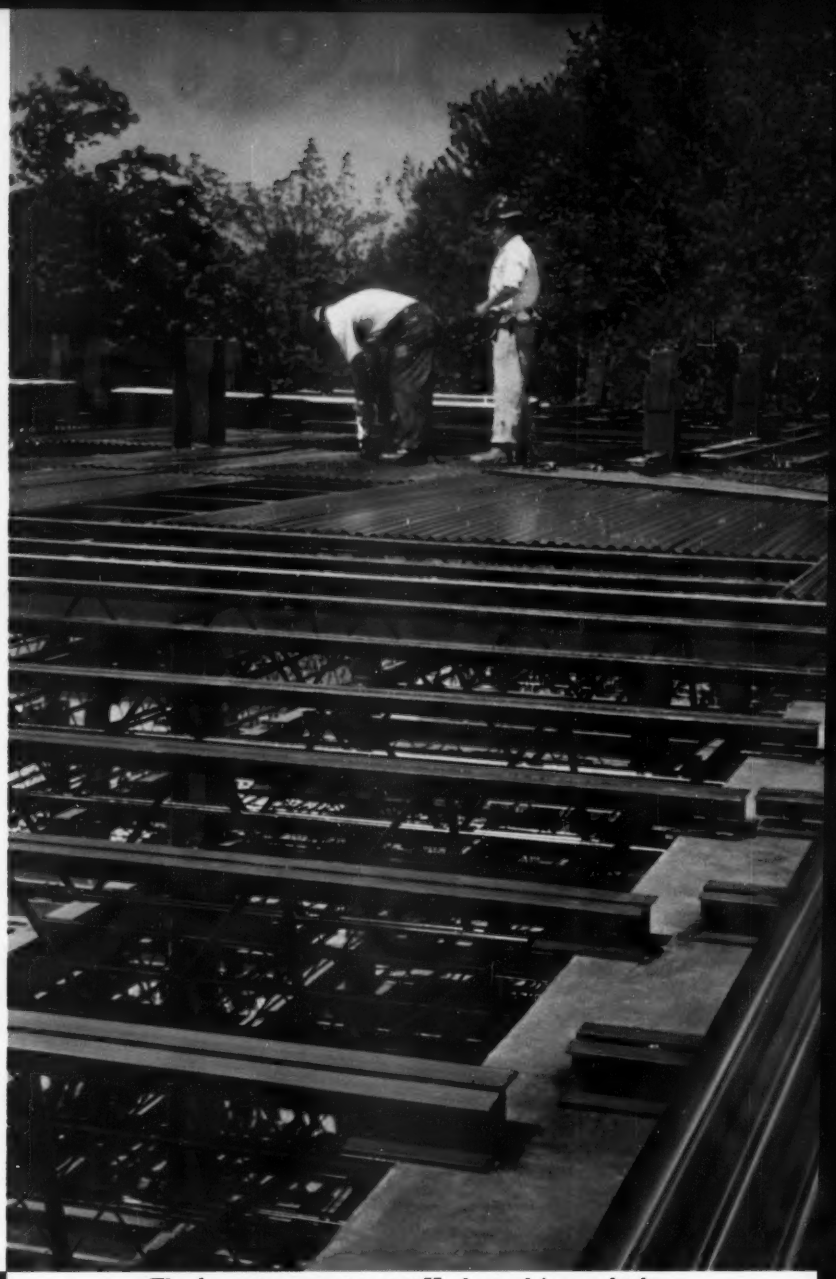
Steel — for strength . . . economy . . . versatility

BETHLEHEM STEEL

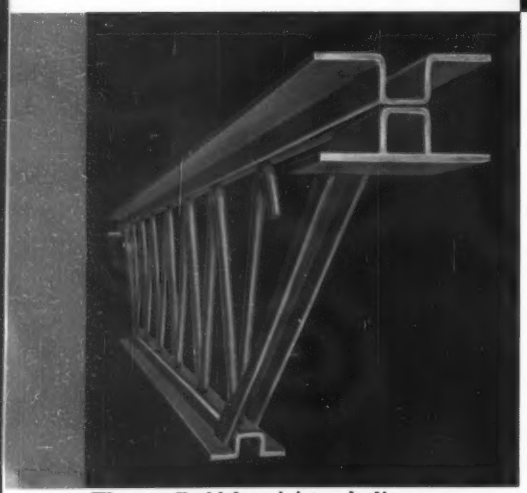
BETHLEHEM STEEL

Contractors like Steel Open-web Joists because

- They arrive at the job site, *on schedule*, fully fabricated, marked, ready for immediate and easy placing.
- Field-welding secures them firmly in place.
- Conduit, pipe, ductwork can be run through the open-webs in any direction. No drilling or complicated angle-work in narrow corners.
- All the accessories . . . bridging, end-wall anchors, ceiling extensions, etc. . . . are supplied with them.



The eleven story apartment at Hackensack is completely steel-framed including Bethlehem open-web joists.



The new Bethlehem joist embodies many years of experience in design, production, and marketing of steel joists.

NEW BETHLEHEM "S" SERIES JOISTS WITH COLD-FORMED CHORDS

The newest member of the Bethlehem family of joists is an "S" series joist using cold-formed top and bottom chords. Cold-forming of the chords allows the metal to be placed in the best position for sustaining loads. It provides additional strength due to cold-working of the chord sections, increasing both the safety factor and resistance to damage in handling. Wide, flat-surfaced chord members offer excellent bearing area for the support of centering, subpurlins, precast plank, etc., and firm flat backing for ceiling lath. The new joist will be available this year.

BETHLEHEM STEEL

Here's why contractors like to work with SLABFORM

1. Roof slabs of lightweight insulating concrete can be poured over Slabform at support spacings much greater than the economical use of flexible centerings will permit.

2. Structural floor slabs poured over Slabform on steel beams often result in savings as much as one-third of the usual forming costs using conventional materials and methods.

3. Slabform provides a solid, safe working platform for all trades.

4. Slabform is tough—it readily takes normal construction abuse.

5. Properly attached, Slabform provides lateral restraint for supporting members and stiffens the entire assembly.

6. Heavy-Duty and Extra Heavy-Duty Slabform particularly can be furnished in special lengths longer than the standard lengths indicated.

BETHLEHEM SLABFORM*

Slabform, Bethlehem's solid steel centering, is a high-strength, formed steel sheet used both as a permanent form for poured concrete and as a permanent supporting member for lightweight insulating concrete fills in roofs. Slabform is made from steel with a yield point testing consistently over 90,000 psi. Its longitudinal ribs give it exceptional strength.

**Registered*

BETHLEHEM STEEL

Installing Slabform, Bethlehem's solid steel centering, on the fourth floor of the apartment building.

Bethlehem Now Makes Slabform in Five Gages

STANDARD SLABFORM Standard Lengths: 6′3″, 8′3″, 10′3″, and 12′3″ **28 GAGE**

HEAVY-DUTY SLABFORM Standard Lengths: 6′0″, to 18′6″ **26 GAGE**

EXTRA HEAVY-DUTY SLABFORM Standard Lengths: 6′0″ to 21′6″ **24, 22, 20 GAGE**

STEEL CONSTRUCTION, *including Bethlehem Slabform, was used in constructing new Pier No. 7 in New York Harbor.*

A Complete Line of Construction Steel

The list of Bethlehem publications at the right is representative of those describing steel products for construction. To get those you want, just circle the number in the coupon below.

1. Open-Web Steel Joists
2. Slabform
3. Structural Shapes
4. The Welding of Concrete Reinforcing Bars
5. H-Piles
6. Sheet Piling
7. Steel Plates
8. Abrasion-Resisting Steels
9. Wire Rope for Construction Equipment
10. Wire Rope Slings and Fittings
11. Stress-Relieved Strand for Prestressed Concrete
12. Solving Drainage Problems (steel culverts)
13. Hollow Drill Steel
14. Rock Bolts
15. Steel Pipe
16. Highway Guard Rail
17. Building The Chase Manhattan Bank
18. News Bulletin—Fabricated Structural Steel

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Please send me the literature as indicated:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
11. 12. 13. 14. 15. 16. 17. 18.

*Name*_____

*Address*_____

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BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

What's it costing you to slow down and shift?

It could well be costing you important time because of slower job cycles. This time is money you'd be saving with TORQMATIC DRIVES in your equipment—and the proof is on TORQMATIC owners' books.

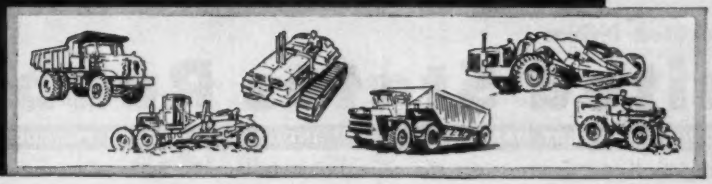
For these owners have their operators quick-shift at *full throttle*—never any power interruption. No more pumping of clutches and timing of shifts. What's more, they don't need a booster tractor to get moving in goo or gob. And these owners free their engines from the shock loads and strains which clashboxes cause. Ending equipment damage saves them about $1,500 to $2,000 every time they train a rookie driver. Another $800 or more goes into the bank each year because they've wiped out engine-disconnect clutch costs.

The reason? TORQMATIC is controlled by a single, small shift lever. There's no leg-tiring disconnect clutch. TORQMATIC *automatically* adjusts engine power output and speed to load or terrain changes, absorbing harmful and expensive shock loads. It provides a steady, increasing torque to the wheels for a smooth standing start.

The men who are making the extra money—who are underbidding you on your contracts—are probably the men who have switched to TORQMATIC. They *know* they'll more than make up the initial extra cost of TORQMATIC in savings alone. You could, too. So see your equipment dealer or write Allison.

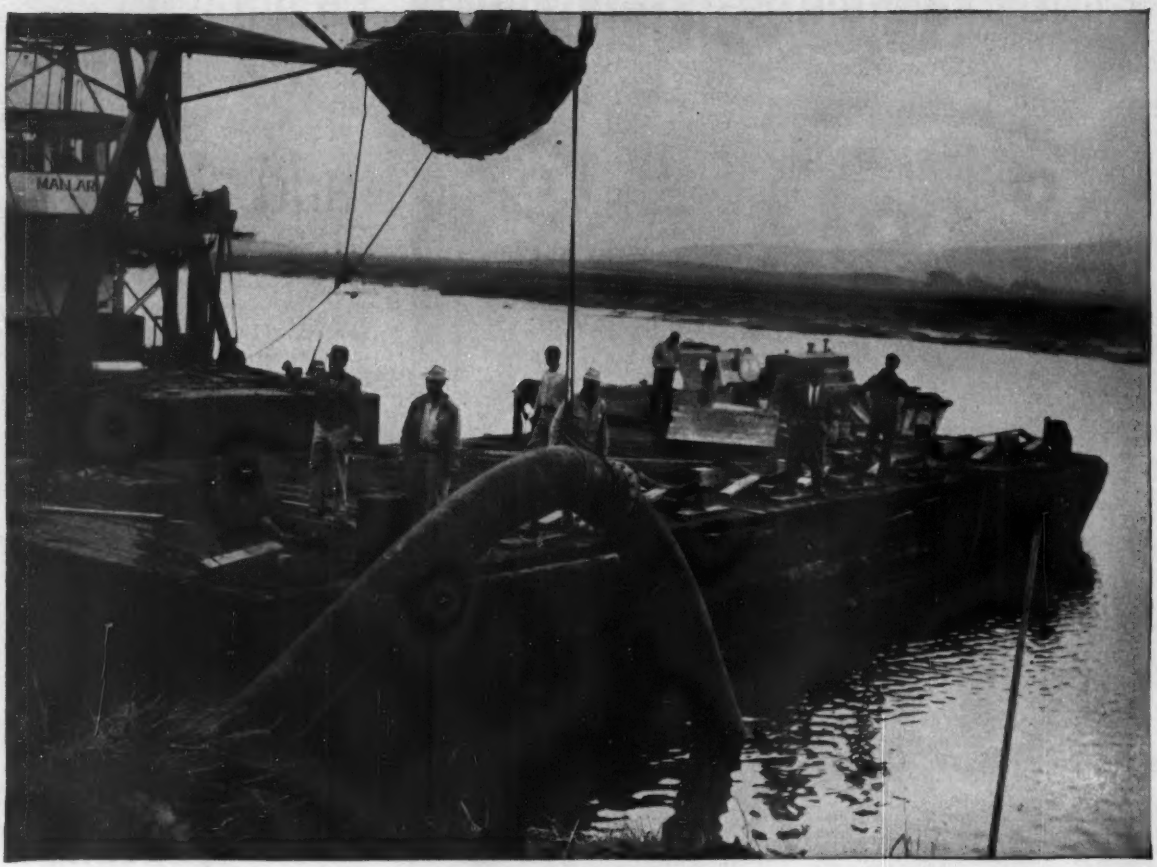
Allison Division of General Motors
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

Allison TORQMATIC



TORQMATIC® DRIVES
THE MODERN DRIVE FOR MODERN EQUIPMENT

US RUBBER PILOT PIPE



UNDERWATER, UNDERGROUND—
this hose loves its salt diet

A large western salt company,* expanding its operations, faced an unusual problem recently: How to economically and efficiently move brine solution across the 600-ft. wide Napa River.

So they turned to 16" U.S. Rubber Pilot® Pipe.

Metal pipe could not be used because it would corrode quickly and because it lacked flexibility. But corrosion-resistant, flexible rubber Pilot Pipe has no trouble withstanding the salt water that has acid content with a PH ranging from 2.8 to 3.5. Moreover, it is flexible enough to follow the contour of the river bottom on which it lies and to handle any shifting due to river currents. Its sturdy cover is unaffected by both river silt and exposure to weathering (where it comes out of the water on either side of the river).

You'll find U.S. Pilot Pipe at work in a wide range of industries, in a wide variety of demanding uses. It's available to you at your "U.S." Distributor.

*Leslie Salt Co., Newark, Calif.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

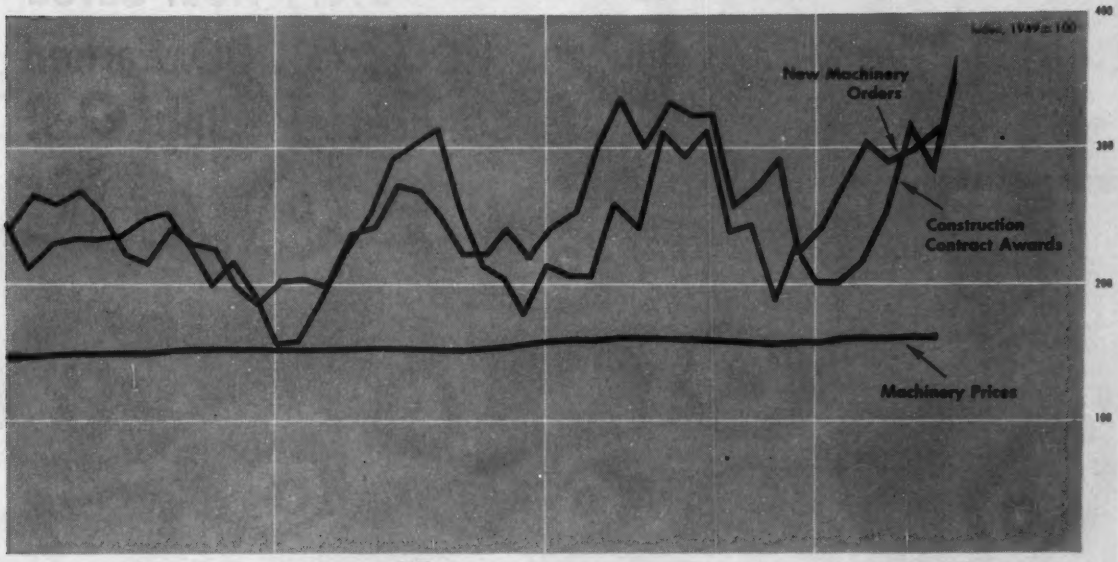
Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Trends in the Machinery Market . . .



Price Index

	JUNE 1960	MONTH AGO	*YEAR AGO	% CHANGE 1959-1960
All Types of Equipment	175.3	175.3*	171.9	+ 2.0
Cranes; Draglines, Shovels	173.4	173.2	168.4	+ 3.0
Shovel, ½ cu yd	167.9	167.9	163.3	+ 2.8
Shovel, ¾ cu yd	175.4	175.4	172.5	+ 1.7
Shovel, 1-1½ cu yd	188.2	188.2	180 6	+ 4.2
Shovel, 2-2½ cu yd	170.3	170.3	162.1	+ 5.1
Shovel, 3-3½ cy yd	167.8	167.8	167.8	0
Shovel, 6 cu yd	197 9	195.0	188.2	+ 5.2
Crane, truck mounted	168.2	168.2	165.7	+ 1.5
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	157.5	+ 3.4
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	166.5	166.5*	165.7	+ 0.5
Scraper, 4 Wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 Wheel, 12-15 cu yd	156.8	156.8	156 8	0
Scraper, 2 Wheel, 15-19.5 cu yd (a)	126.2	126.2	122.3	+ 3.2
Grader, heavy duty	173.7	173.7	172.6	+ 0.6
Grader, light & medium	171.1	171.1	171.1	0
Tractors (non-farm, incl industrial)	191.6	191.7	187.8	+ 2.0
Wheel type, off-highway (a)	129.2	129.2	128.2	+ 0.8
Crawler type, 50-74 dhp	200 4	200.4	191.9	+ 4.4
75-99 dhp	201.2	201.2	196.4	+ 2.4
100-154 dhp	195.3	195.3	191.3	+ 2.1
155-200 dhp	203.3	203.3	201.3	+ 1.0
Machinery, Tractor Mounted	169.5	169.5*	168.6	+ 0.5
Dozer, cable controlled	154.4	154.4*	154.4	0
Dozer, hydraulic controlled	186.6	186.6	186.6	0
Cable power control unit	152.9	152.9	151.4	+ 0.9
Loader, tractor shovel	163.2	163.2	161.5	+ 1.0
Specialized Machinery	157.8	157.8	155.3	+ 1.6
Ditcher	150.2	150.2	156.6	— 4 1
Roller, tandem	226.4	226.4	209.8	+ 7.9
Roller, 3 wheel	178.7	178.7	170.2	+ 5.0
Ripper and rooter	156.6	156.6	150 5	+ 4 0
Dewatering pump, 10 M gph	111.5	111.5	110.0	+ 1.3
Dewatering pump, 90 M gph	151.5	151.5	150.5	+ 0.6
Portable Air Compressors	167.5	167.5	167.5	0
Contractor's Air Tools	181.6	181.6	181.6	0
Mixers, Pavers, Spreaders	161.8	161.8	156.4	+ 3.4
Mixer, portable, 11 cu ft	166.8	166.8	165.0	+ 1.0
Mixer, portable, 16 cu ft	172.7	172.7	169.8	+ 1.7
Mixer, truck, 6 cu yd	135.1	135.1	132.4	+ 2.0
Mixer, paving, 34 cu ft	196.7	196.7	193.5	+ 1.6
Concrete finisher & spreader	201.9	201.9	191.5	+ 5.4
Bituminous distributor	126.2	126.2	122.3	+ 3.1
Bituminous spreader	179.4	179 4	170.2	+ 5.4
Bituminous paver	165.6	165.6	162.6	+ 1.8
Off-Highway Trucks, Wagons (b)	102.5	102.5	101.1	+ 1.3
Contractors off-highway truck (b)	102.0	102.0*	101.0	+ 1.0
Trailer dump wagon (b)	106.7	106.7	101.4	+ 5.2

• (a) January, 1955 = 100 • (b) January, 1958 = 100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

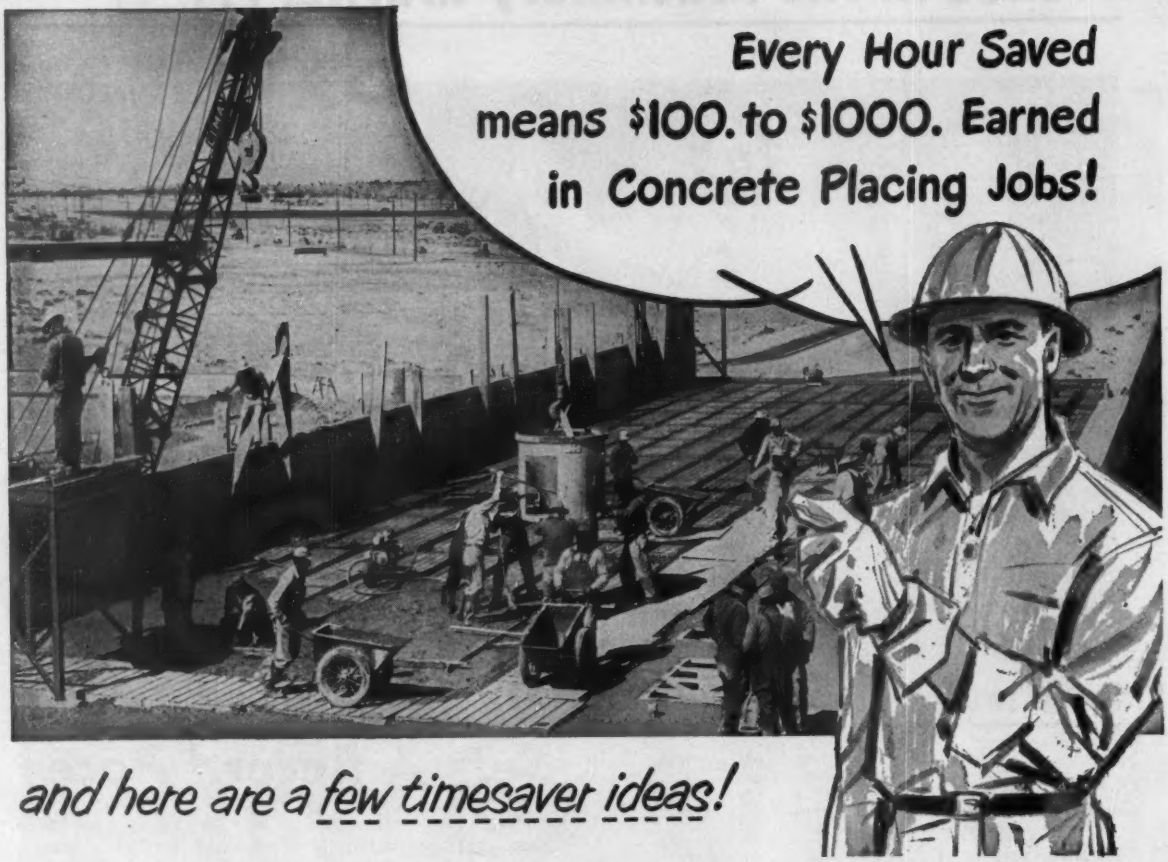
New Business Sets A Record Pace

Heavy construction contractors racked up new business at a record clip in June. And the boom roared ahead in July, according to contract awards reported by *Construction Methods* during the first three weeks. Surging industrial and highway awards were standouts during the July period, contrasting with a rather poor showing in June.

Meanwhile, the slow but steady rise in list prices of new construction equipment ground to a halt in June. Though the over-all BLS index was steady in June there were three price index changes: Small increases in 6-yd power shovels and heavy graders were offset by a slight decline in crawler shovels under 45 drawbar hp (not shown in the table at left).

New orders for construction and mining equipment hit their highest in 10 months during May, according to the McGraw-Hill Economics Department's index. This measure is based on total orders received by a number of companies that are predominantly construction and mining equipment makers. The index increased 5% over April to 318, based on 1949=100. But this was 5% below May '59. For the first five months, the index averages 300, or 3% under last year's record.

Moreover, a number of equipment makers have recently bemoaned poor sales early in '60—below expectations for several, below a year ago for some. With some 630 firms in the industry, the orders picture varies widely from one to the next. Total shipments by the industry in 1960 are expected to total about $1.7 billion, estimates the Business & Defense Services Administration, US Department of Commerce. This compares with a record $2.4 billion in '56 and $1.8 billion in '59.



Every Hour Saved means $100. to $1000. Earned in Concrete Placing Jobs!

and here are a few timesaver ideas!

Team up equipment to prevent delays which keep men idle—equipment costs are much less than lost man hours.

Use two or even three concrete buckets on a pouring job. While the crane spots one bucket and the concrete is being dumped, the other bucket can be filled, thus you can almost double output by eliminating waiting time between bucket loadings.

Accordion Hopper attachments on Gar-Bro Concrete Buckets guide concrete into narrow wall forms —prevent spillage and speed up the placing job.

When placing concrete in piers, use two or three collection hoppers with flexible steel drop chutes to direct concrete without segregation. Thus you can rotate the chute lines and shorten one line while the other is in use. This will eliminate delays of the bucket and crane and transit mix trucks.

Use Receiving Hoppers, either floor hoppers or portable hoppers for intermediary storage of concrete. Thus you keep a steady supply of concrete and prevent stoppage of the cart crew. At the same time you eliminate delays of transit mixers.

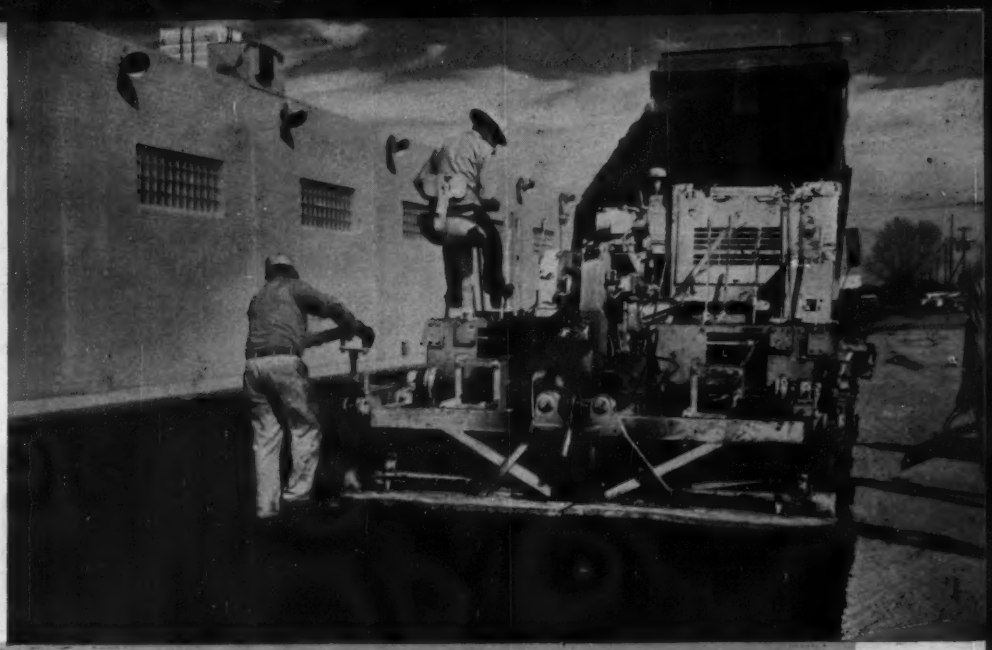
Supply your men with carts that are designed for handling concrete — Gar-Bro Concrete Carts — they are *balanced when fully loaded;* are easy to handle, easy to dump.

Concrete placing has become a science in the past ten years and, today, in the contracting business only careful planning and proper equipment can guarantee adequate profits.

See your Gar-Bro dealer for suggestions and methods of handling concrete or write for Gar-Bro's Concrete Handling Manual. **Gar-Bro Mfg. Co., Los Angeles, Calif. • Peoria, Ill.**
General Offices: 2415 E. Washington Blvd., Los Angeles 21, Calif.

GAR-BRO

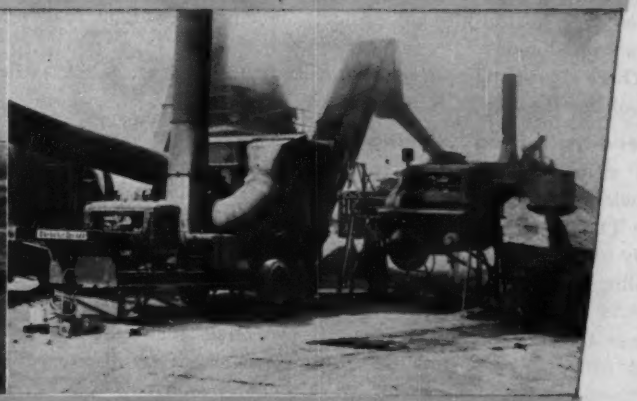
The World's Most Complete Line of
CONCRETE HANDLING EQUIPMENT



Arizona Paving & Contractors, Inc. laid 2,000 tons of asphalt in less than two days for the parking area of a Phoenix Supermarket. This Barber-Greene finisher, powered by an International UD-282 diesel engine, transforms hot-mix into smooth pavement at the rate of 200 tons per hour.

Why it's wise to specify INTERNATIONAL POWER for road building equipment

Givens Construction Co. uses International diesel power to lay a 6-inch base coat for U. S. Interstate Highway between Tucson and Phoenix, Arizona. The Woods Roadmixer adds water to one part cement and 4½ parts sand, which is bladed and compacted immediately.

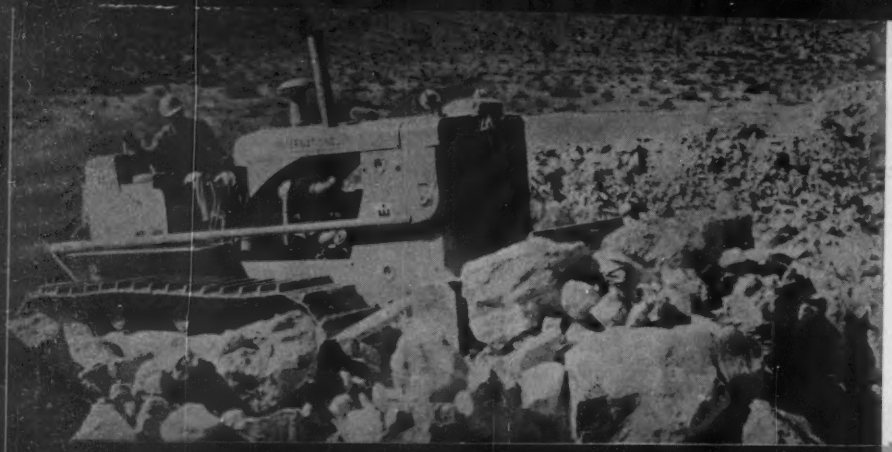


San Ore Construction Co. Inc. of McPherson, Kansas relies on two International diesel engines for asphalt production. Company President Clare Miller says, "We depend on International diesels to provide steady, economical power for this continuous mix plant." San Ore has produced over a million tons of mix for Kansas roads.

From parking lots to super highways, contractors everywhere are discovering that the most efficient surfacing equipment is powered by International. When selecting power for your machines, check into the complete line of International engines—35 carbureted and diesel models from 16.8 to 385 max. hp. Contact your International Engine Distributor or Dealer soon, and find out how little it costs to power—or repower—your equipment with International.

INTERNATIONAL®
ENGINES

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE



Even moving a blade-full of shot-rock around the curve, there's no hesitation, no sluing to spill the load. The TD-25's operator has separate speed control of each track to get full-capacity performance, full time. And only the new TD-25 has the power plus of the direct-start, turbocharged DT-817 International engine—that delivers 230 high-torque hp!

HOW POWER-STEERED, POWER-SHIFTED . . . TD-25 takes

—on California mining operation

Even before all the blast dust has settled, this International TD-25 is slamming tons of shot-rock from the benches, so trucks can resume hauling to the processing plant. Then, at this gypsum mine in California, the "25" takes over the "shovel-feeding" chore—dozing full blades of rock upgrade, downgrade, and 'round the curves, to help keep the big dippers swinging full. And in between times, the "25" takes over its third tough project: benching new haul road around mountain slopes!

Three slam-bang rock operations to handle—it's a made-to-order situation for the Planet Power-steered TD-25!

"Dead-track drag" eliminated! You don't brake a track and "half-kill" your pull-power to turn, as you do with king-sized clutch-steered crawlers. With Planet Power-steering you simply change the speed of one TD-25 track—on-the-go, and with 2-finger ease! Around comes the fully-loaded TD-25—with "live" power on both tracks and both tracks pulling. Load-limiting "dead-track drag" is eliminated!

And combined, on-the-go Hi-Lo power-shifting lets you match power to load, instantly—forward or reverse. Just shift one track to high range—the other to low—to do slope-hugging, full-bite benching, or to operate straight ahead with off-center loads!

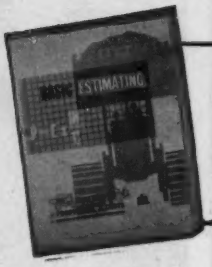
The "25" is platformed on new 7-roller tracks with double-box-beam frames. The design provides super undercarriage strength for slam-bang conditions—strength to match the full effort of the direct-start, high-torque DT-817 International Diesel engine.

Power-steer and power-shift the TD-25 with king-sized loads. Measure the bonus capacity you get with exclusive Planet Power-steering and Hi-Lo power-shifting. See how this control combination enables you to outearn other big rigs up to 50%. Then measure what it means to get this double-barreled advantage *only* in the TD-25—and as standard equipment *to boot!* Let your International Construction Equipment Distributor demonstrate.

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois
A COMPLETE
POWER PACKAGE

International® Construction Equipment

"Boulder-dozing" after blasting— The TD-25 does some "blasting" itself to move "big-as-a-house" hunks of rock aside. Heavy-duty TD-25 Dura-Rollers defy the rock-dozing "grind"—with the industry's thickest shells to prevent flexing—positive grit exclusion—and 1,000-hr.-interval lube capacity!



Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* See your International Construction Equipment Distributor!

over three slam-bang rock jobs

...only clam-action 4-in-1's upgrade your income with...

"equipment spread"

GRADE Use "carry-type scraper" action to grade with inch-close, labor-saving accuracy. Watch the earth boil into this 1½-cu. yd. Four-in-One as the operator does precise finish-grading.

GRAB Only the clam-action 4-in-1 lets you sit, grab, lift, and load "impossibles" like stumps, concrete, and rubble of all kinds. This action helps make the 4-in-1 a big money-maker for land and site clearing—cuts your equipment investment.

Put the whole "equipment spread" of International Drott 4-in-1 actions to work. Prove in minutes that each 4-in-1 action doubles for one or more specialized machines; that each action gives you a great range of job-handling working positions; that you're really getting a "Forty-in-One"! Compare 4-in-1's exclusive shock-swallowing Hydro-Spring performance protection. See what it means to upgrade your income with a 4-in-1, far above what an old-style single-action loader, or any other limited-duty rig can earn you. Let your International Drott Distributor demonstrate!

INTERNATIONAL® DROTT®

International Harvester Co., Chicago 1, Illinois

Drott Manufacturing Corp., Milwaukee 15, Wisconsin

BACK-DRAG Pull down materials wholesale (and safely) from the sand or gravel bank. And grade hard-to-get-at slopes with easily-controlled 4-in-1 back-drag action—which you get by simply moving a lever!

SCARIFY Use the scarifier attachment to loosen stony or compacted soils for easy loading or blading. The third valve of the *standard* International Drott hydraulic system provides the control power for the scarifier.

STRIP Set the 4-in-1's clam in "carry-type scraper" position—strip sod or topsoil with efficiency to match specialized, single-purpose stripping equipment. And get jobs other rigs can't do.

SPREAD On-the-go, put down a layer of topsoil, fill dirt, or "cover" with exclusive 4-in-1 "carry-type scraper" accuracy. Regulate thickness of layer you spread, with fingertip ease!

utility!

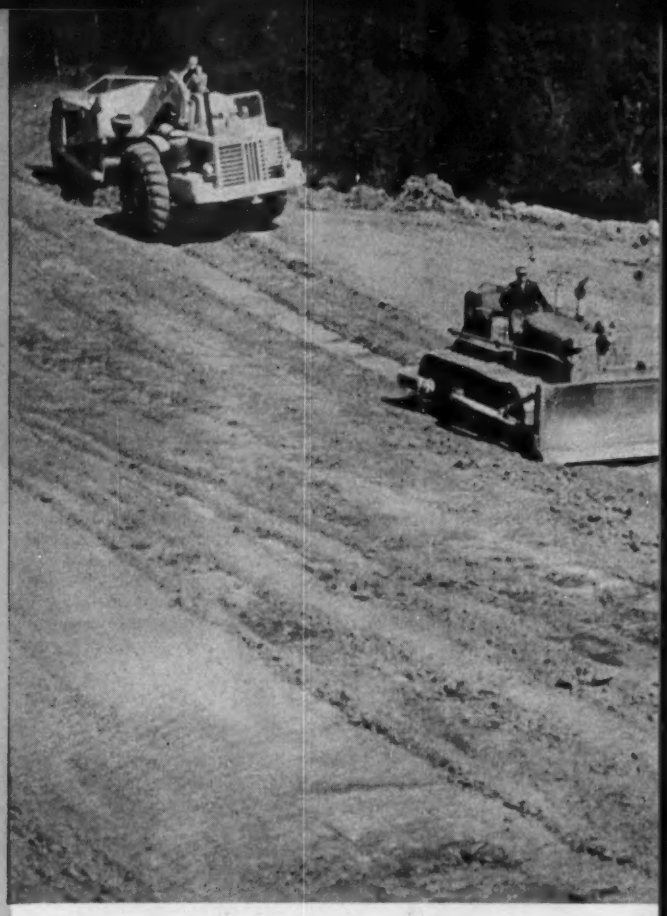
BOTTOM-DUMP End the sticky materials problems, for good! Opening the clam of this 2¼-cu. yd. TD-15 Four-in-One pulls material from bucket surfaces—gravity down-pull does the rest—to assure positive, self-cleanout bottom-dumping.

PICK-UP Employ easily-controlled clam action to fill the 4-in-1 with elusive loose materials, in one fast gulp—and without "chasing" them. Watch this 1⅛ cu. yd. TD-6 Four-in-One! You eliminate need for hand-shovel clean-up labor!

DO SHOVEL WORK Apply famous 4-in-1 pry-over-shoe break-out power and get power-shovel-like excavating force. This 3-cu. yd. TD-20 digs up concrete slab, tons at a time with up to 43,150 lbs. of break-out force—replaces a boom-type rig here!

BULLDOZE Open the 4-in-1's clam and you've got a full-capacity, earth-rolling dozer—depth-regulated by positive radius control. This action can "double" for a specialized dozer 'most anywhere! And it's instantly available at a touch of the "job-selector" lever!

How Payscraper® "automotive" operating ease highballs your dirt-on-fill delivery



You won't need stunt-car "jockeys" or muscle men to give you the dirt-on-fill bonus the 375-hp International Payscraper rigs can deliver! Almost all the danger, hard work, and rump-bumping of rubber-tired rig operation is engineered out of Payscraper models. And an exclusive combination of operating ease, safety, and comfort features is engineered in!

Push-button, finger-tip ease! Your operator simply pushes a button to direct-start the DT-817 Diesel and ready 375 high-torque hp to give a cycle-speeding Payscraper rim-pull of 60,000 lbs.; plus time-saving, "no-lag" control power!

Your operator pulls directly out of 90° turns—with 34-cu. yd. heap loads on either the 2-axle "295" or 3-axle "495." Ample power and traction team with the exclusive International tandem-pump, rack-and-pinion steering to give positive, right-angle turning with full power. This finger-tip controlled system leaves the "steering feel in the steering wheel," even at the top 33.5 mph speed.

For fast, positive dumping, the high Payscraper apron lift gives you a "barn-door-like" opening up to 94 inches! The positive-acting Payscraper ejector mechanism is powered by the International shock-absorbing, planet-type Cable Control Unit. One cable drum of this simple, fast acting unit actuates apron and ejector; the other drum positions the bowl to control spreading action. Shown, the 3-axle "495" fast-dumping on the fill!

He power-shifts the Payscraper, up or down almost like easing his car into automatic drive. The 4-speed, planetary-type, torque-converter transmission gives him load-speeding *automatic* direct-drive lock-ups in second, third and fourth gears!

Your operator power-steers the 150,000-lb. loaded Payscraper with automotive-like ease. He commands the exclusive "mind-reading" International rack-and-pinion, tandem-pump steering system—plus 3-degree forward spindle pitch that improves scraper balance and prevents "bucking bronco" nose-downs in high-speed turns!

He controls 34 cu. yd. loads on hills, fills, turns—anywhere—with positive-acting Payscraper air brakes. He power-controls all Payscraper dirt-handling actions, finger-tip easy, with the International PTO-driven constant running cable control unit!

And he rides in a foam-cushioned, 15-adjustment, bucket seat that gives positive, selective ride-control to match luxury car comfort.

See for yourself what it means, in highballing your dirt-on-fill delivery, to arm your operators with Payscraper advantages. Prove what happens when you give them the highest power-to-payload punch of the 34-cu. yd. rigs—along with Payscraper operating ease and safety. Choose the 2-axle "295," or 3-axle "495" and let your International Construction Equipment Distributor demonstrate!

Up or down power-shifting—effortless power-steering—fast power control of Payscraper dirt-handling—all help your operator give you fast "kick-outs" and get full pusher hp efficiency. The highest power-to-payload punch of all 34-cu. yd. scrapers helps highball dirt delivery. The planet-powered TD-25 and TD-24 are "pushing" for this fleet of "295's"—building superhighway!

Here's the big torque converter transmission—that helps Payscraper models turn 375 turbocharged hp into industry topping production! Besides providing smooth shifting and speeds for every need, this torque converter gives automatic lockup for direct, load-speeding mechanical drive in 2nd, 3rd, and 4th gears!

International®
Construction Equipment

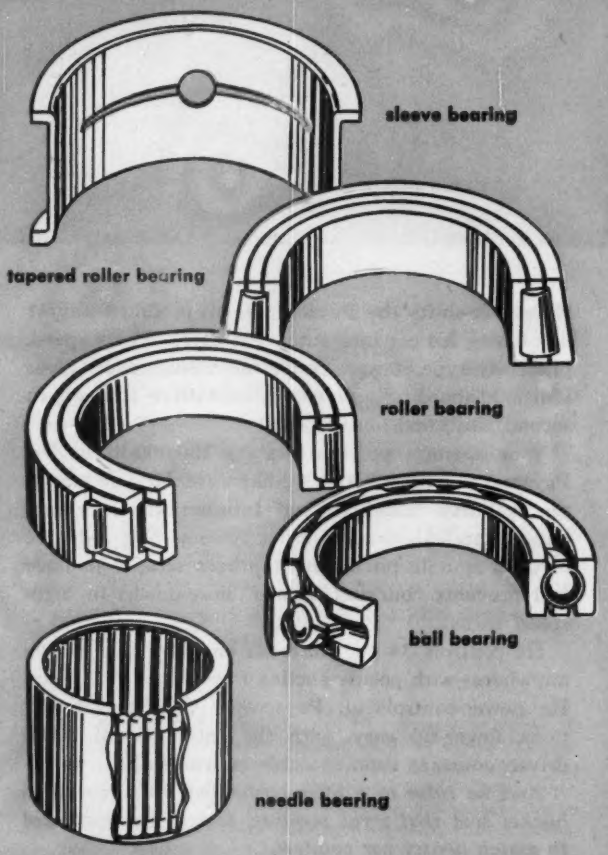
International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE

buy quality again...

Restore original performance with genuine IH replacement parts

There's more than fit in the quality-matched parts of your International equipment...*Fitness* is just as vital! Each and every part is given the special combination of strength, resistance to shock, wear, distortion, and "fatigue" that its special application requires. There's no magic short-cut to building into any part the correct combination of qualities each one needs to do its job. *Only* in genuine International parts do you get original *fit-and-fitness.*

As an example, let's look at genuine International bearings. For high-speed applications, load-carrying ability, or high-impact resistance, International bearings have the metallurgical features designed to fill the rugged requirements of your construction equipment. Correct load-carrying capacities are built into International bearings according to application, shaft speed, and stresses under all kinds of conditions. International's high standard of manufacturing and testing is your further guarantee of finest quality. On all jobs, under all conditions, you can count on the durability and high performance of International bearings, bushings, and seals as well as all parts sold under the International name.



International parts and service facilities are always nearby, with a network of 12 parts depots and more than 200 distributor outlets. You get the part you want, when you want it!

IH PARTS

International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

ALPHA news and notes from the field

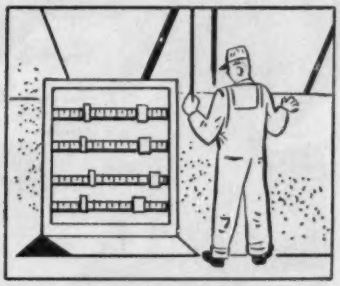
BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

More Rules of Thumb for Concrete Mixes

This is the second set of rules of thumb offered by Alpha to guide you in making changes in concrete mixes. Note that these methods are recommended for approximations only. Depend on engineering assistance whenever available.

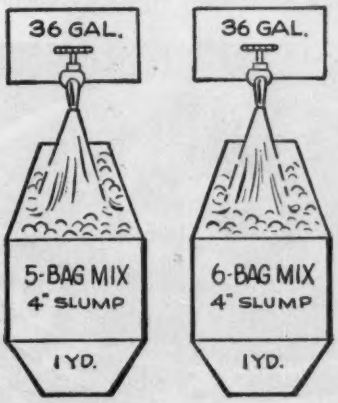
1. Changes in Cement Content

For each sack increase in cement content, subtract 80 lbs. of aggregate. For each sack decrease in cement content, *add* 80 lbs. of aggregate.



2. Maintaining Same Slump of Non Air-Entraining Mixes

Changing the cement content of non air-entraining mixes—and maintaining the same slump—requires no appreciable change in *total* water per yard. Bear in mind that total water includes free moisture in aggregates.



3. Sticky Concrete

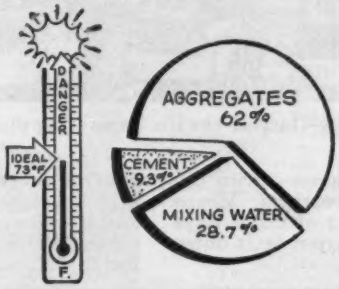
Sticky concrete is usually due to too much sand or too much air. To reduce stickiness:

a. reduce amount of air-entraining agent, but check with air meter to assure sufficient air content.

b. reduce sand 50 lbs. and increase coarse aggregate 50 lbs. If stickiness remains, repeat.

4. Reducing Mix Temperature

The effects of the temperatures of concrete ingredients on the mix are indicated by the approximate percentages shown below.



1. Sprinkle hot-aggregate stock piles with water or use fog sprays to cool the aggregate.
2. Apply fog sprays to operating conveyor belts and to coarse aggregates in bin storage.
3. Use crushed ice in the mix, replacing water pound for pound.
4. Avoid stock-piling aggregates directly in the sun if possible. Shade coarse-aggregate bin storage.
5. Protect or insulate mix-water storage tanks and water lines from direct rays of the sun.
6. Avoid the use of strength accelerators in hot weather.

One or a combination of the above suggestions should enable reduction of concrete temperature to a safe level.

5. Changing From Regular to Air-Entraining Mix

To maintain the same strength when changing from a regular cement mix to an air-entraining mix, reduce the water ¼ gallon per sack of cement and sand 10 lbs. per sack of cement *for each 1% of entrained air.* The adjusted mix will have a higher cement content.

6. Adjusting Lightweight Mix

If a lightweight mix is designed for dry aggregate, and damp aggregate is used, a quick adjustment in the mix is necessary. This can be made without changing the mix design too much, as follows: Subtract the weight of the added water from the total water. (This is assumed to be the absorbed water.) Divide and add this weight equally to the fine and coarse lightweight aggregates. If concrete sand is used in the mixture, it should be remembered that the adjustment should be made in the lightweight aggregate proportions, *not* in the sand.

Reprints of this advertisement are available on request.

ALPHA

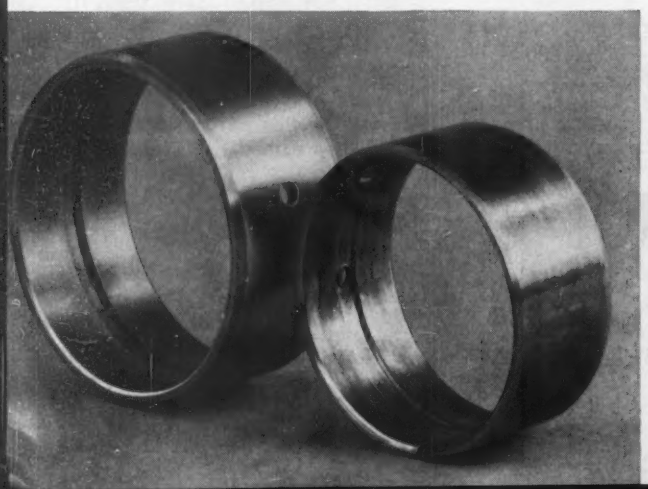
PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

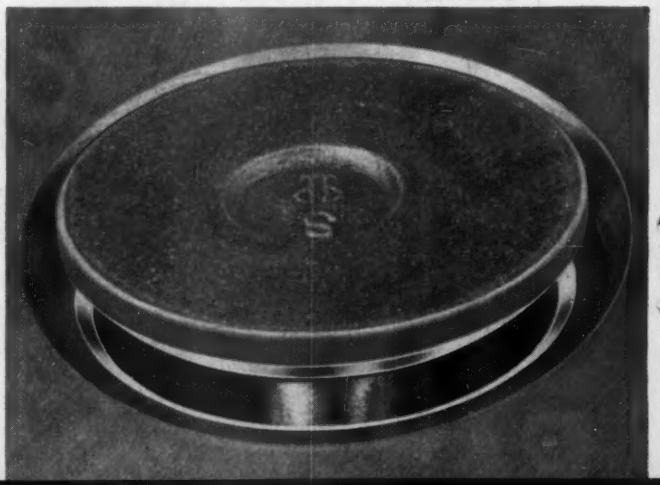
Before it is shipped every run-in and tested

Part of Onan's testing facilities—largest electric generating plant testing area in the industry!

Big, brawny bearings on Onan engines—twice the bearing area of most competitive bearings. Means longer life between overhauls. Another of many ways that Onan is built *up* to performance, not built down to a price.



Stellite coated exhaust valves and valve seats. One of toughest alloys known. Gives you up to 300% longer valve life than uncoated valves. It's the important details like this that make Onan more economical in the long run.



Onan Electric Plant is for hours

And we mean every Onan Electric Plant! This rugged workout under load means every Onan is ready for hard work the day you get it!

Every Onan plant has a nameplate with horsepower and output ratings. Every single plant is put through a series of tough tests to make sure it does what the nameplate says it will do *before it is crated for shipping.*

But this isn't enough. Inspectors from an independent laboratory pay our factory frequent surprise visits. Their job is to check and double-check—our tested plants as well as our testing equipment and methods. They pull a plant off the line, run it, stop it, gun it, stall it, check and recheck. The end result is Onan's exclusive *Performance Certification* . . . your guarantee of getting the power you paid for.

See the dependable Onan Generating Power Plants soon. You can find an Onan distributor in the Yellow Pages in every major city, or write direct.

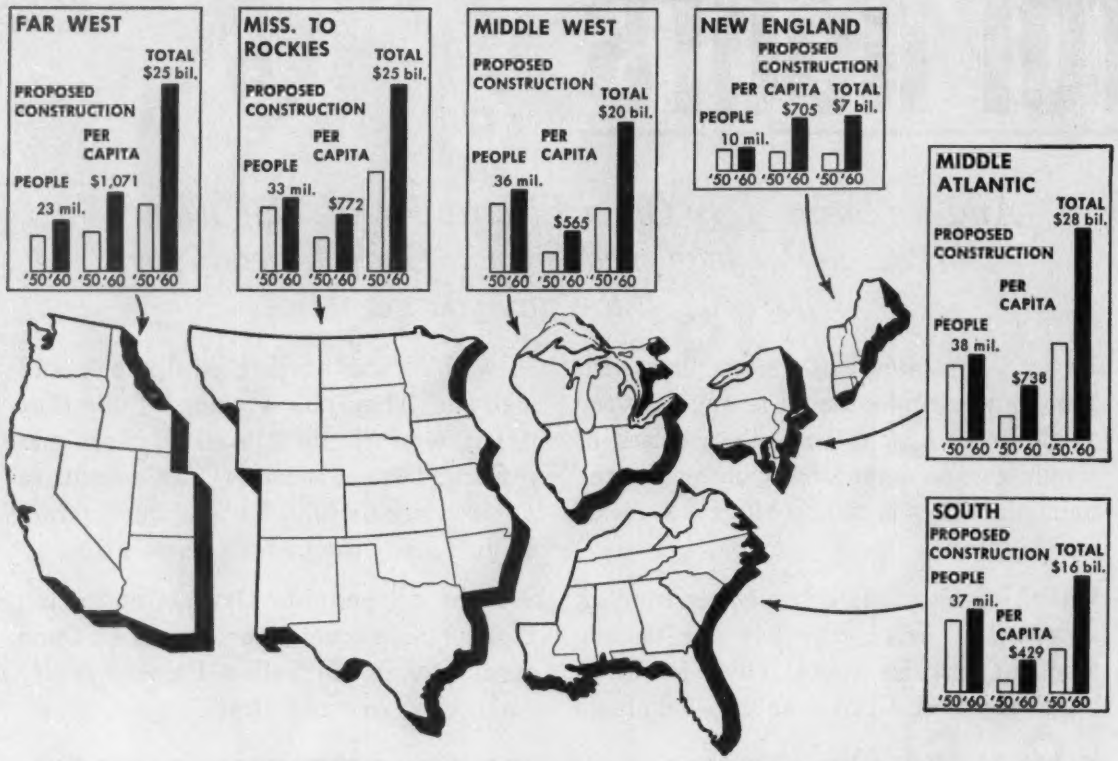
ONLY ONAN GIVES YOU THIS CERTIFICATION

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
D. W. ONAN & SONS INC.
Minneapolis 14, Minnesota
Onan

Onan®

World's Leading Builder of Electric Power Plants

D. W. ONAN & SONS INC., 2632 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.



West Leads in 1960 Construction Boom

HEAVY construction contractors racked up more business in the first six months of this year than in the same period of '59 in every region except the South. Pacing the 1960 boom in new business are the states west of the Mississippi: Contracts are up 19% in the Mississippi to the Rockies, and they're up 16% in the Far West. Next best gain is the 14% rise in the Middle Atlantic, according to *CM&E* figures.

While moderate increases of 3% to 5%, respectively, are on contractors' books in the Middle West and New England, volume is down 11% in the South.

Total new business in the 50 states is 9% above the first half of '59, as awards matched the January-June record of $11.4 billion reported by *CM&E* in 1956 (but there were only 48 states then).

The outlook for the second half is for nearly as much new business, $11.3 billion, as in the first half. By year's end, 1960 volume should climb to an all-time high of $22.7 billion, 11% more than '59 and $1 billion more than the 1956 record.

Look for contract volume to step up in the second half of '60 for industrial and commercial building, highways, and public nonresidential building. Though industrial and highway awards were disappointing in the first half, the second stanza of this year will be much better.

Thus 1960 looks to become an even better year for contractors than forecast by *CM&E* (*Jan. '60, p. 117*) which predicted a 6% rise over 1959.

Huge Plans Key to Boom

The strong upsurge in construction contracts during the second quarter reflects the fast buildup in new plans during 1959 to date. So far, only a relatively small portion of these new plans has cleared the planning stage and gone to contract. But contracts in the second half of this year will more fully mirror the soaring volume of plans initiated in '59 and '60.

Moreover, many recently proposed projects won't come off the drawing boards until next year. As they emerge, they'll keep the contract volume trend tilted up in 1961.

Plans Outpace Population

Plans for new heavy construction grew faster than the country's population during the Fifties. While the US population rose 17% during the decade ending May 1960, *CM&E*'s Backlog of Proposed Heavy Construction in the planning stage rocketed

continued on page 56

The new No. 12 Series E Motor Grader spreads untreated base and handles cleanup for Massey Sand and Rock Company

THE NEW NO. 12E SETS THE STANDARDS

Widening U. S. 60-77-99 to a 4-lane limited-access highway, Massey Sand and Rock Company of Indio, California, recently added a new No. 12E Motor Grader to its Cat fleet. The improvements, effective with this new series machine, showed up immediately. As Tom W. Carter, manager of the firm, puts it: "The increased productivity of the new No. 12 was very noticeable. You can depend on new Cat products to give greater operator comfort and better productivity."

One of the big reasons for the new performance standards of the No. 12 is the new compact 115 HP engine. Incorporating the latest developments in metallurgy and design, this modern engine has greater lugging ability for the tough jobs, long life and easier servicing.

Caterpillar engineers did not stop with just a compact diesel. There's a new vertical starting engine to give easier, all-weather starting. The dry-type air cleaner is now standard—it removes 99.8 per cent of air-borne dirt every service hour, cuts maintenance.

Of course, the new No. 12 retains the dependable Caterpillar oil clutch that gives up to 2000 hours without adjustment; mechanical controls that engage easily; and plenty of throat clearance between moldboard and circle for improved rolling action.

See your Caterpillar Dealer. He'll show you—on your job—that the No. 12E lives up to what users are saying about it. He can also show you the 150 HP No. 14, the No. 112F with 100 HP and the No. 112E with 85 HP—they're built to be the best for the job.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

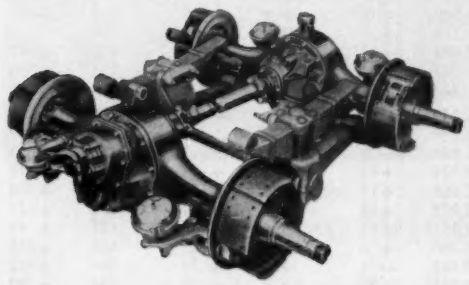
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE NEW NO. 12
MOTOR GRADER BUILT
FOR THE TOUGH JOBS

TCT
TRUCKING
CHEVROLET

NEW BULLDOZER-BUILD WITH THE BEST NEW BOGIE IN THE BUSINESS! 1960 CHEVROLET M70 TANDEMS

New in build and bogie, these rock-ribbed roughnecks from Chevrolet are all but bursting with pent-up earning power. They're out to work up new profit highs with tough Torsion-Spring Ride, new rear axle ruggedness, new might and muscle to move mountains of payload more efficiently!



■ New Eaton-Hendrickson Bogie

Key component in Chevy's new M70 tandems is the new Eaton-Hendrickson rear suspension, built for bruising hauls with two big 16,000-lb. Eaton axles and a husky Hendrickson suspension. These bogies feature a new, single, straight through drive line which means less strain and wear on the universal joints for lower maintenance. A new inter-axle differential that divides the driving load equally between axles provides more efficient utilization of engine torque. Rugged walking beams and husky torque arms keep axles equidistant and wheels tracking straight and true for less tire and component wear. And two heavy-duty 12-leaf springs cushion and support the heaviest loads. Here's the most advanced tandem suspension available today . . . and it comes to you with a design that's been work-proved on truck jobs all over the world.

■ Chevrolet's big new M70 tandems are built to stand up to truck-busting hauls that would break the heart of a lesser truck. You get brute strength to spare in heavy-duty frames with increased side rail stiffness and massive channel crossmembers that supply rock-solid rigidity to carry a full load over any terrain. But that's just the beginning.

With Chevy's revolutionary Torsion-Spring Ride providing a cushion between the road and the load, there's far less strain on the driver, cargo *and* chassis components. You get a ride that makes every road a highway; that makes possible faster safe speeds for more trips in a day, more profit.

1960 Chevrolet M70 tandems are available on 157-, 175-, and 193-inch wheelbases and all models feature a rugged high capacity independent front suspension. Hefty cast and forged steel control arms provide precision front wheel control and heavy-duty spherical joints and massive pivot bearings last longer. For maximum control and driving ease, both on the road and off, power steering is *standard* on all Chevy tandem models.

You get plenty of big-truck power, too, supplied by Chevy's famous 230-h.p. Workmaster V8. Coupled to the smooth 5-speed Spicer transmission, it gives you a power team that's more than a match for the toughest tandem jobs. For wider range performance, you will want to add the new 3-speed auxiliary transmission*, or specify Chevy's fully automatic Powermatic*. Get the details on the tandems that offer the money-making might you need. See your Chevrolet dealer soon. . . . Chevrolet Division of General Motors, Detroit 2, Mich.

**Optional at extra cost.*

1960 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

COMMENT
from the BUTLER ENGINEER

. . . For ADULT Roadbuilders, Ready Mixed and Concrete Products Producers ONLY . . .

Confidence is a prime buying motive in everything from suspenders to a plant to produce concrete. Whether it's a roadbuilder's set-up, a ready mix or a concrete products plant, you want assurance you're not going to get caught with your plants down.

• • •

After 3 years of research, cussin' and discussion, the 7 major concrete plant manufacturers, working as cooperatively as upper and lower teeth with the National Ready Mixed Concrete Association, have developed strict standards for bins, batchers, cement silos, conveyors — nearly every component for a concrete plant. Important are definitions of manual, semi-automatic and fully automatic single batchers; of manual, semi-automatic and fully automatic batching *systems* which incorporate cement, water and aggregate batchers.

This group is known as the Concrete Plant Manufacturers Bureau. It's part of the N.R.M.C.A. So, the Standards are as authoritative as St. Peter's thumbs-up or thumbs-down. The Bureau has developed Rating Plates for equipment made by its members. Here's an example:

This gives you a firm, positive basis for confidence in the equipment.

Now — add Butler Trademark . . .

. . . and you have Reliability as firm as Mr. Gibraltar's Rock.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

133%. Construction plans per capita just about doubled to $687 as of May '60.

Population growth obviously spurred backlog growth in all regions of the country (see chart on top of page 52, table below). The faster the population rise, the greater the Heavy Construction Backlog increase tended to be—in most regions.

The three regions that are leading the 1960 contract award boom are the three regions with the highest plans per capita: Far West; Mississippi to the Rockies; and Middle Atlantic.

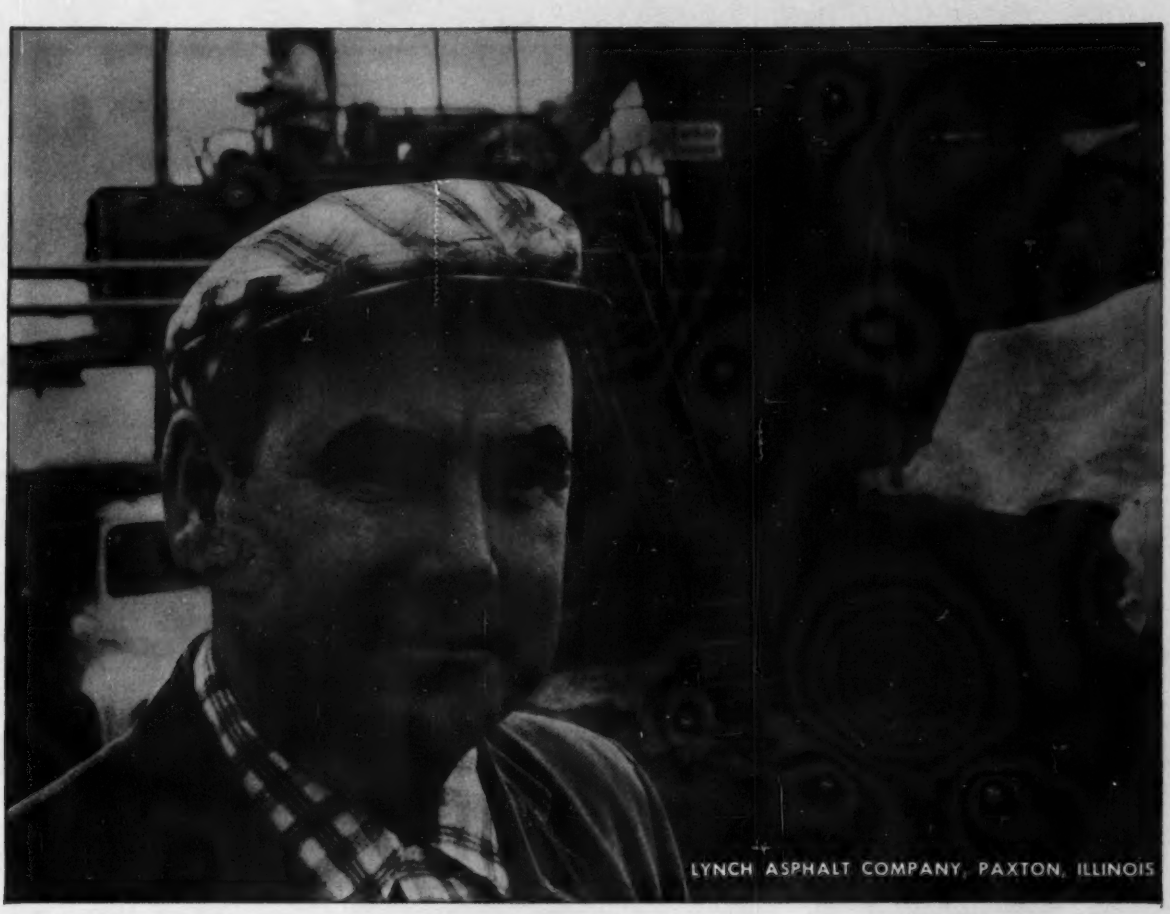
continued on page 59

Proposed Construction Grows Faster than Population in Decade

Comparison of CM&E Backlog of Proposed Work and population, May 1950-May 1960.

	Population		Backlog of Proposed Construction		Per Capita Proposed Work	
	May 1960p (thousands)	Change 1950-1960 %	As of May 1960 (millions)	Change 1950-1960 %	As of May 1960	Change 1950-1960 %
U. S. TOTAL*	**176,888**	**+17**	**$121,529**	**+133**	**$687**	**+ 99**
NEW ENGLAND	**10,426**	**+12**	**7,355**	**+195**	**705**	**+163**
Maine	964	+ 6	378	+226	392	+209
New Hampshire	600	+12	218	+ 64	363	+ 45
Vermont	387	+ 2	204	+ 89	527	+ 84
Massachusetts	5,120	+ 9	3,401	+209	664	+183
Rhode Island	845	+ 7	500	+ 92	592	+ 80
Connecticut	2,510	+25	2,654	+242	1,057	+173
MIDDLE ATLANTIC	**38,097**	**+13**	**28,133**	**+116**	**738**	**+ 91**
New York	16,597	+12	12,514	+ 93	754	+ 73
New Jersey	6,019	+24	5,208	+228	865	+163
Pennsylvania	11,218	+ 7	7,377	+125	658	+110
Maryland	3,073	+31	1,800	+ 79	586	+ 37
District of Columbia	747	— 7	834	+ 77	1,116	+ 90
Delaware	443	+39	400	+130	903	+ 65
SOUTH	**36,619**	**+15**	**15,723**	**+167**	**429**	**+132**
Virginia	3,899	+17	2,087	+263	535	+209
West Virginia	1,847	— 8	504	+152	273	+173
North Carolina	4,524	+11	1,164	+ 93	257	+ 72
South Carolina	2,358	+11	1,132	+194	480	+164
Georgia	3,917	+14	1,222	+162	312	+129
Florida	4,893	+77	2,355	+155	481	+ 44
Alabama	3,244	+ 6	1,640	+301	506	+278
Mississippi	2,162	— 1	766	+ 71	354	+ 73
Louisiana	3,231	+20	1,919	+129	594	+ 90
Kentucky	3,012	+ 2	1,115	+260	370	+252
Tennessee	3,532	+ 7	1,819	+147	515	+130
MIDDLE WEST	**35,974**	**+18**	**20,332**	**+141**	**565**	**+104**
Ohio	9,636	+21	6,584	+157	683	+112
Indiana	4,637	+18	2,536	+136	547	+100
Illinois	9,982	+15	5,986	+128	600	+ 99
Wisconsin	3,926	+14	1,078	+117	275	+ 91
Michigan	7,793	+22	4,148	+147	532	+102
MISS. TO ROCKIES	**32,541**	**+13**	**25,114**	**+ 89**	**772**	**+ 67**
Minnesota	3,393	+14	1,270	+130	374	+102
Iowa	2,736	+ 4	863	+112	315	+102
Missouri	4,307	+ 9	2,228	+ 47	517	+ 35
Arkansas	1,772	— 7	1,153	+ 48	651	+ 60
North Dakota	627	+ 1	307	+ 5	490	+ 4
South Dakota	677	+ 4	293	+ 6	433	+ 2
Nebraska	1,399	+ 6	820	+ 86	586	+ 77
Kansas	2,161	+13	1,198	+ 81	554	+ 59
Oklahoma	2,301	+ 3	1,347	+ 58	585	+ 54
Texas	9,494	+23	12,289	+117	1,294	+ 76
Montana	668	+13	636	+ 33	952	+ 18
Wyoming	327	+12	479	+ 67	1,465	+ 49
Colorado	1,736	+31	1,542	+ 94	888	+ 48
New Mexico	943	+38	689	+134	731	+ 69
FAR WEST*	**23,231**	**+39**	**24,872**	**+177**	**1,071**	**+ 99**
Idaho	664	+13	955	+ 63	1,438	+ 45
Utah	887	+29	840	+147	947	+ 92
Arizona	1,282	+71	1,543	+101	1,204	+ 18
Nevada	281	+76	251	+ 83	893	+ 4
Washington	2,824	+19	5,194	+221	1,839	+170
Oregon	1,756	+15	1,169	+110	666	+ 82
California	15,537	+47	14,920	+199	960	+104
Alaska	224	+74	435	—	1,942	—
Hawaii	620	+24	941	—	1,518	—

p—preliminary.....*Excluding Alaska and Hawaii



"Cities Service Lubrication Engineer Helped My Business Get Started"

"How could we afford a lubrication engineer?" says W. P. Lynch, who has been employed in the asphalt business for fourteen years and now runs his own less-than-one-year-old company. "Of course we couldn't! So we found a company that would give us the services of a lubrication engineer. It relieves me of an important problem as we're starting out here."

From previous experience, Lynch was acquainted with Cities Service and their lubrication engineers. Upon forming his own firm, Lynch turned to Cities Service and Lubrication Engineer, Jeff Combs. Combs undertook the task of solving Lynch's lubrication problems. Combs answered all questions about the use and application of petroleum products. He assisted in the selection and purchase of lubrication equipment. Among the Cities Service products recommended by Combs and used by Lynch: C-300 Motor Oil for all automotive equipment, Trojan Greases and Oils for general lubrication and gears, DC-950 as a "hot oil" for heat transfer in the asphalt plant.

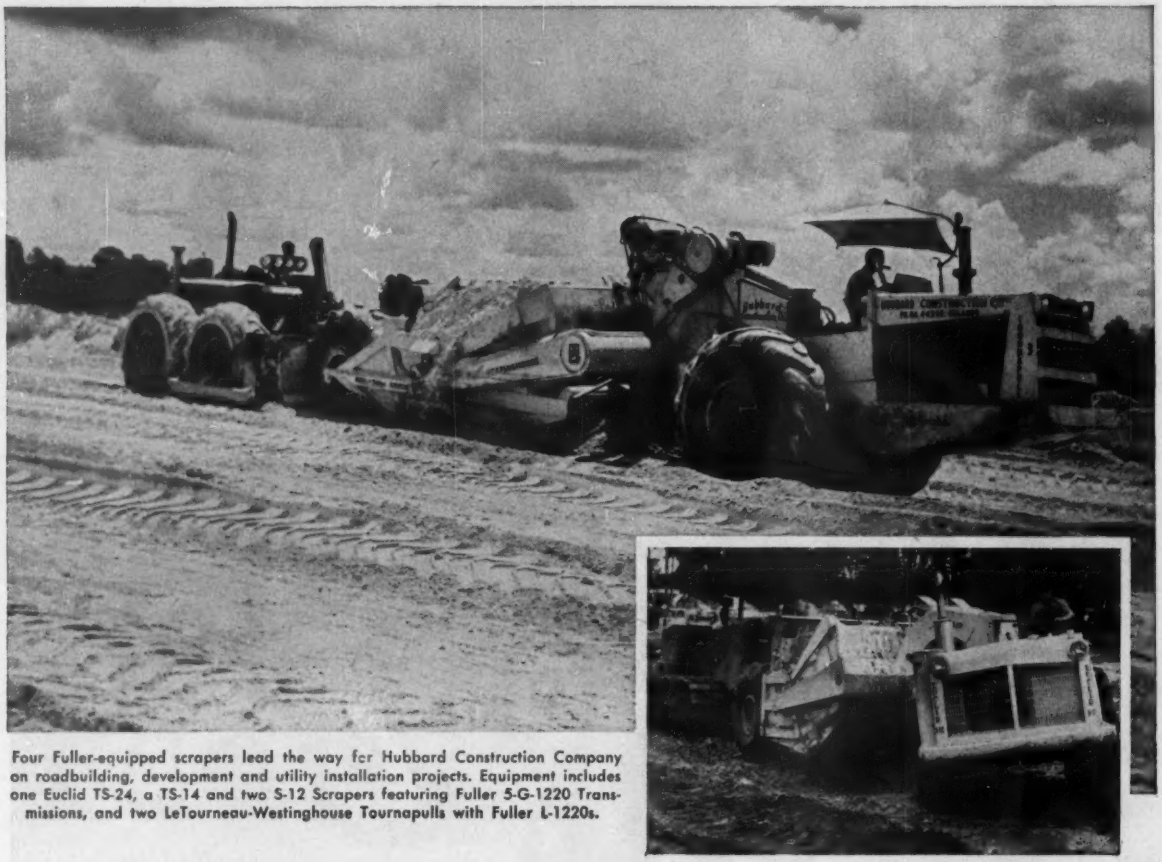
To find out how the professional assistance of a Cities Service Lubrication Engineer can help in the operation of your business, call your nearest Cities Service Office. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

Portable hot mix asphalt plant with 120 tons per hour capacity is owned by Lynch. Other equipment includes trucks, rollers, compactors, graders.

Employees are shown here using company's asphalt paving machine to pave church parking lot. Road and driveway paving are also done by Lynch.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



Four Fuller-equipped scrapers lead the way for Hubbard Construction Company on roadbuilding, development and utility installation projects. Equipment includes one Euclid TS-24, a TS-14 and two S-12 Scrapers featuring Fuller 5-G-1220 Transmissions, and two LeTourneau-Westinghouse Tournapulls with Fuller L-1220s.

Geared by FULLER . . .

"We get faster work cycles and longer life with countershaft brake and pressure lubrication systems."

"Reliability, economy and serviceability are exceptionally important in purchasing new construction equipment," says J. C. Reddick, Vice President, Hubbard Construction Company, Orlando, Florida. "Fuller Transmissions meet the requirements for long life and fast work cycles that we must have in our scraper operations."

Fuller's countershaft brake gives quick, easy upshifts without double clutching, keeps speeds up and cuts cycle time. The pressure lubrication and filtration system prolongs gear and bearing life.

For long life, easy shifting and positive lubrication in your scraper operations, specify Fuller Transmissions which include the countershaft inertia brake and pressure lubrication and filtration systems.

Ask your dealer about these features designed to put more profit in your operation.

FULLER TRANSMISSION DIVISION
MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Automotive House, Great Portland Street, London W.1, England, European Representative

CONSTRUCTION BUSINESS...

continued from page 56

The Far West's population exploded by 39% in the last decade. But this was like a popgun compared to its construction backlog, which zoomed 177% — second greatest gain among the six regions. As in 1950, the Far West leads in per capita construction plans in 1960 with $1,071 in the planning stage for each person living in the area.

The South ranks third in both population growth and backlog gain. Though it remains at the bottom in per capita backlog, it scored the second largest increase in per capita plans.

The Mississippi to the Rockies and the Middle Atlantic regions are on the lower end of the scale of increases in both population and Heavy Construction Backlog. Their per capita backlogs have increased at a slower pace than in other regions, but they still rank No. 2 and No. 3 in actual per capita backlog.

The relationship between population rise and backlog increase fades in two other regions. Though New England had the biggest backlog rise, 195%, it had the smallest population gain, 12%. The Middle West has a reverse twist: It was second in population gain but only fourth in backlog increase. As a result, it yields fourth spot in per capita backlog to New England in 1960.

SOME BIG CONTRACT AWARDS OF THE MONTH

American Machine & Foundry Co., New York, N.Y. Construct 36 Titan missile launching complexes at five sites in the continental U.S. Air Material Command, Ballistic Missile Center, 5740 Arbor Vitae St., Los Angeles, Calif. $81,576,000.

Atkinson-Ostrander Co., a joint venture comprising the **Guy F. Atkinson Co.,** San Francisco, Calif. **Ostrander Construction Co.,** Portland, Ore., **Arundel Corp.,** Baltimore, Md., **L. E. Dixon Co.** San Gabriel, Calif., and **Hunkin-Conkey Construction Co.,** Cleveland, Ohio. Construct a hydroelectric and irrigation project on the south fork of the Feather River in Calif. Oroville-Wyandotte Irrigation District, Oroville, Calif. $52,600,000.

continued on page 62

Bid-winning contractors depend on Ramset

TO CUT FASTENING TIME AND COST

Chop fastening costs 20% - 30% - up to 80% with Ramset, the finest in powder-actuated fastening! Savings like this can help you bid lower and get more business . . . do every job quicker and better with Ramset, the split-second way to set fasteners into concrete or steel without heavy equipment or tedious pre-drilling.

Ramset's complete selection of powder charges and austempered Red Tip fasteners assure the "right" combination for any job . . . no more paying for excess power or fastener size – you just buy what you need. Your Ramset dealer will help you work out the most economical solution to your fastening problems. Call him (under "Tools" in Yellow Pages) or write us direct for helpful literature.

Ramset® Fastening System

OLIN MATHIESON • WINCHESTER-WESTERN DIV. • 281-H WINCHESTER AVE. • NEW HAVEN 4, CONN.

"WE NEED HIGHEST QUALITY MATS.."

Giesen & Latson Constr. Co., Austin Texas, use Barber-Greene 879-B and 873 finishers to pave closely checked jobs in state capitol

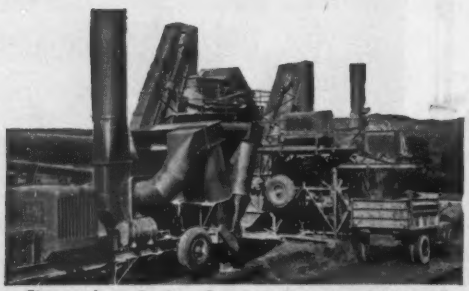
Finishing asphalt paving in Austin, Texas, is the same as in any state capitol—a "fishbowl" operation with all the top state highway department brass viewing results.

But these working conditions are just fine with E. W. Giesen, partner in Austin's leading paving firm—Giesen & Latson Constr. Co. He states: "We know we need highest quality mats because of close scrutiny given our jobs. We get mats that pass every inspection from both our Barber-Greene 879-B and smaller 873 finishers.

"Furthermore," he adds, "our 879-A finisher paved 300,000 tons in three years and set a maintenance record that influenced our buying two new

PARTNER E. W. GIESEN, right, and Dan Dyes, the firm's supt. of asphalt hot mix construction, both like the mat quality, low maintenance, and flexibility of operations they get with the Barber-Greene 879-B and 873 finishers.

TEXAS "JACK RABBIT." The firm's 873 Barber-Greene finisher really gets around, handling the small, scattered jobs and working teamed with the 879-B on big jobs. The unit paves on tracks, travels on rubber tires.



Choose from Barber-Greene's largest selection of 17 continuous and batch-type mix plants to complete the most profitable paving package available.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Plants in DeKalb, Illinois..Detroit..Canada..England..Brazil..Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

..WE GET 'EM WITH BARBER-GREENES"

Barber-Greenes."

Use Side-by-Side Setup—This Austin firm's contracts run about 40% city work and 60% highway jobs. Wherever possible on highway jobs with interchanges, Giesen & Latson work both finishers side-by-side. This arrangement gives them a wide range of paving width combinations that speed contracts while maintaining top quality standards.

Below, the 879-B finisher is shown paving three 12′ lanes on Interstate Highway 35 north of Austin. Lifts consist of a 1½″ base course on Texas Type C mix and a 1″ surface course of Type D. Operating consistently at 50 fpm, the 879-B handles 20-ton trucks. Both Barber-Greenes easily handle all the varying mat widths required. Extensions and cut-off shoes give width ranges from 8-14′ on the 879-B machine and from 6-12′ on the 873.

5 Big Buys in No. 1 Finisher Line—Before you buy your finisher, check your Barber-Greene Distributor and discover why his machines were No. 1 choice of 82% of the asphalt paving contractors in a 1960 nation-wide poll. This great line includes the 879-B and 873 shown here and: two giant heavy duty, high speed machines—the crawler-mounted SA-60 and the pneumatic-tired SB-60; and the SJ-50 Road Widener and Shoulder Paver, only machine that handles all types of widening and shoulder paving with all materials, including concrete.

"POOL TABLE" SURFACE describes this mat being finished by the Giesen & Latson 879-B Barber-Greene finisher on Interstate Highway 35 north of Austin, Texas. And the 873 lays the same quality mat when working side-by-side with this machine.

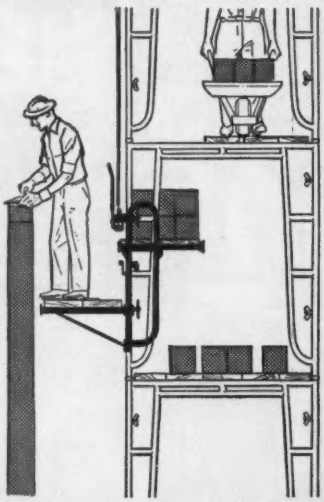
CUT MASONRY WALL COSTS

SAFWAY MOBIL-BRACKET method

gives you important bid advantages

masons and materials go up with the wall to increase job speed and efficiency

- **masons** always level with the wall.
- **materials** always at waist level.
- **wheeling** platform for tenders.
- **platform** for advance material storage.
- **no delays** for re-rigging at higher levels.



SAFWAY

SAFWAY STEEL PRODUCTS, INC.
6228 W. STATE STREET
MILWAUKEE 13, WISCONSIN

WRITE FOR BULLETIN 58A

CONSTRUCTION BUSINESS...

continued from page 59

Diesel Construction Co., New York, N.Y. Erect a 21-story hotel at 51st St. and Lexington Ave., in New York City. Loew's Theatres, Inc., 1540 Broadway, New York, N.Y. $25,000,000.

Robin Construction Co., Chicago, Ill. Construct 1,055 housing units including swimming and wading pools at Riverside Park in Chicago. Albert Robin and Julius Epstein, 61 W. Superior St. $25,000,000.

Macco Corp., and **Raymond International Inc.,** both of Paramount, Calif., **Henry J. Kaiser Co.,** Oakland, Calif., and **Puget Sound Bridge & Drydock Co.,** Seattle, Wash. A joint venture to construct Atlas missile launching complexes at Walker Air Force Base, Roswell, N.M. Corps of Engineers, Box 1583, Albuquerque, N.M. $22,115,828.

Turner Construction Co., New York, N.Y. Erect a 22-story bank and office building with adjoining parking garage for the Marine Plaza Redevelopment Project in Milwaukee, Wis. Wisconsin Clybourn Urban Redevelopment Corp., 625 N. Water St., Milwaukee. $18,000,000.

A. J. Etkin Construction Co., Oak Park, Mich. Construct two 21-story apartment buildings with adjoining shopping center and parking facilities. S. L. Katzin & Associates, 6522 S. Cottage Grove, Chicago, Ill. $13,000,000.

C. Rollow Contracting Co., St. Louis, Mo. Erect a 12-story hospital in St. Louis. Sisters of Mercy, St. Johns Hospital, St. Louis. $12,000,000.

S. S. Silberblatt Co., New York, N.Y. Construct 800 Capehart housing units at Fort Hood, Tex. Corps of Engineers, Box 1229, Galveston, Tex. $12,119,400.

Andersen-Westfall Co., Inc., Portland, Ore. Construct a post office in Portland. Post Office Dept., 12th and Pennsylvania Ave. N.W., Washington, D.C. $12,000,000.

W. F. Holt & Sons, Inc., Nashville, Tenn. and **Johnson, Drake & Piper, Inc.** Houston, Tex. A joint venture to erect a surgical hospital and regional office in

continued on page 65

NYGEN-BUILT

GENERAL TIRES

stay on the job 'til it's done to assure most profit per project

Built with exclusive Nygen cord, General Off-the-Road tires are the one sure way to protect and build job profits. Nygen cord construction means extra protection from costly in-the-field damage. And General's deep-digging, high flotation treads keep rolling whatever the going. From now on, be sure of less downtime, more profit . . . with Nygen-built General Tires on your units.

THE GENERAL TIRE & RUBBER CO. • AKRON 9, OHIO

25% more hole per hr.

in hard limestone with high silica content

...than with competing rig

Quarry performance like this is standard with REICHdrill. Why? Because:

- ...all-hydraulic top-drive rotary provides infinitely variable speed of drill rotation – the right speed for every formation.
- ...direct-drive to drill stem saves power loss.
- ...all air used to drill and clean hole.
- ...no complicated transmission, no rotary table.
- ...no kelly bar – in and out of the hole faster.
- ...instant safety torque release protects all drive components.

REICHdrill has built a reputation for keeping maintenance costs low; footage records high.

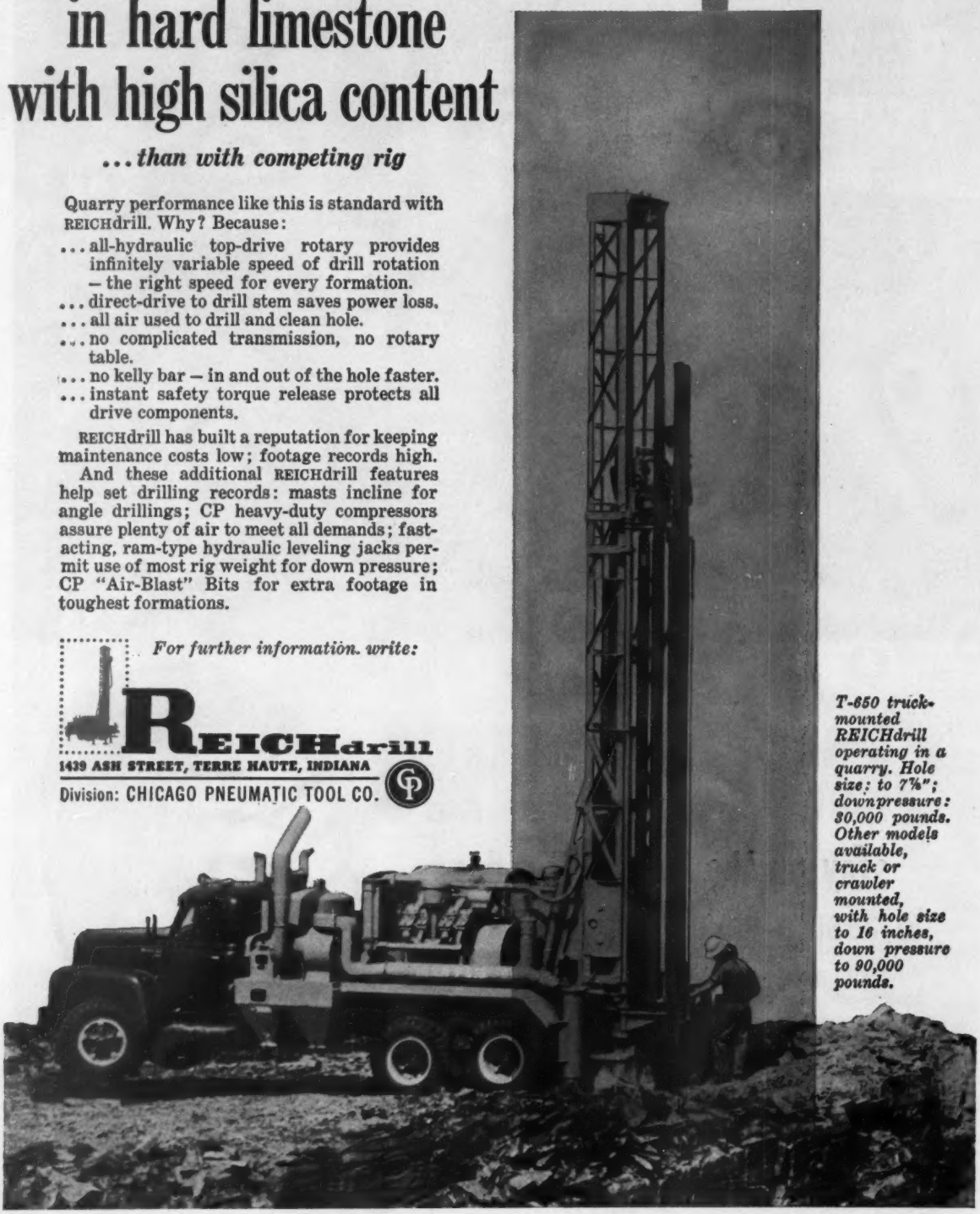
And these additional REICHdrill features help set drilling records: masts incline for angle drillings; CP heavy-duty compressors assure plenty of air to meet all demands; fast-acting, ram-type hydraulic leveling jacks permit use of most rig weight for down pressure; CP "Air-Blast" Bits for extra footage in toughest formations.

For further information, write:

REICHdrill

1439 ASH STREET, TERRE HAUTE, INDIANA

Division: CHICAGO PNEUMATIC TOOL CO.



T-650 truck-mounted REICHdrill operating in a quarry. Hole size: to 7⅞"; downpressure: 30,000 pounds. Other models available, truck or crawler mounted, with hole size to 16 inches, down pressure to 90,000 pounds.

CONSTRUCTION BUSINESS...
continued

Nashville, Tenn. Veterans Administration, Munitions Building, Washington 25, D.C. $9,322,000.

John Colford Contracting Co. Ltd., Montreal, Que., and **Kerby-Sanders Inc.**, New York, N.Y. Construct plumbing, heating and air conditioning system for a 40-story office building in Montreal. Webb & Knapp Ltd., 1010 St. Catherine St., Montreal, Que. $8,500,000.

Peter Kiewit Sons' Co., Arcadia, Calif. Grading and paving for 2.9-mi of 8-lane San Diego Freeway in Calif. State Division of Highways, 120 S. Spring St., Los Angeles. $7,676,933.

Slate-Hall-Hamilton Co., Portland, Ore. Construct 5.9-mi of freeway on U.S. 99 including approach roads and five bridge structures. State Division of Highways, 1120 N St., Sacramento, Calif. $7,469,832.

Halbert Construction Corp., Birmingham, Ala. Construct an earth-dam and spillway for the Pearl River Valley Dam near Jackson, Miss. Pearl River Water Supply Dist., Jackson. $6,651,900.

Daniel Construction Co., Jacksonville, Fla. Erect a shopping center in Jacksonville. Food Fair Properties, Inc., 255 Lexington Ave., New York, N.Y. $7,000,000.

Patti MacDonald Construction Co., Anchorage, Alaska. Erect a 165-bed hospital in Anchorage. Sisters of Charity of Providence, 8th and L Sts., Anchorage. $4,522,800.

To Set the Record Straight

A complex concrete ring supports the cable roof of the Memorial Auditorium in Utica, N. Y. (CM&E, May, p. 96). One of the main problems during the pour was to fill all sections of the ring form and prevent voids beneath a horizontal panel that formed the top of a lip on the ring. The concrete was designed for 5,000 psi ultimate strength and was relatively stiff. So the contractor, Sovereign Construction Co., added Pozzolith to the mix to increase its workability.

Ease the profit squeeze

with a PAYLOADER®

"We have never liked any machine so much"

"We have tested and worked alongside other loaders and the Hough beats them all for slicing up hard packed paving, blacktop and concrete. You have better bucket control plus the pry-out action that Hough alone can supply . . . plus superior balance and traction that lets you get in there and push with no wheel spin-out."

That's what Bill Holland says about the Model H-70 "PAYLOADER" tractor-shovel he operates for Arnold's Custom Landscaping in Mesa, Arizona. Besides doing excavating, grading and truck loading in the granite pits, they specialize in demolition and razing work, preparing sites for new construction.

For example . . . The working versatility of the H-70 really paid-off recently when it took less than two days time to tear out a hard, 2-inch asphalt driveway, parking pavement and the foundation of an old restaurant and filling station in clearing a 100 x 150-ft. area for a new, modern building.

A dependable "PAYLOADER" can be the key machine in your new construction, repair and maintenance work, too. The versatility of these units plus their rugged strength, dependable performance and big capacity protects profits on any material handling job. A Hough Distributor will gladly demonstrate the wide selection of interchangeable attachments available that *save time* on the job and the *high cost* of single purpose machines.

PROVEN 'PAYLOADER' MODELS — available in 20 models (2,000 to 12,000-lb. operating capacity) for every material handling need, indoors or out . . . and backed by the finest Distributor organization in the tractor-shovel industry.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
706 Sunnyside Avenue,
Libertyville, Ill.

Send Bulletin No. 424 describing the complete "PAYLOADER" line of tractor-shovels:

8-5-2

Name
Title
Company
Street
City State

The C. F. REPLOGLE Company ...an outstanding contractor

...from $76,000 to $17 million construction a year

THE ROLE OF CONTRACTORS in the future growth and prosperity of the nation is becoming increasingly important. In 1946, $12.7 billion of construction was completed compared to $52 billion in 1959 . . . and an estimated $54 billion in 1960. To complete the projects of the next decade, staggering amounts of machinery, materials and manpower will be required. The ability to combine these essentials plus new methods and techniques of contractor ingenuity are the ingredients of the success of the Replogle Company. Let's take a look at this contractor's organization.

From $76,000 to $17 million in 15 years

C. F. "Rep" Replogle, president of the C. F. Replogle Co. of Circleville, Ohio is an engineering graduate with more than 30 years experience in heavy construction and roadbuilding. In 1939 he struck out on his own, doing bridge repair work as a prime or sub contractor. His success in this venture was interrupted by World War II. Following his Navy tour, which included a Seabee command post, in 1946 he bought surplus equipment and started in business. Drainage, land clearing, and highway sub work were his specialty. In March, 1954, the firm was incorporated, and Replogle bid successfully on state highway construction, bridges, dams, industrial sites, and drainage work, both public and private. The company's operational experience also includes heavy foundation, pile driving, steel building erection and other related industrial work.

From the Circleville, Ohio headquarters, "Rep's" operations have been extended from the borders of Ohio into Indiana, W. Virginia, Kentucky and Michigan. The rapid expansion and success of this firm is reflected in its annual revenue which zoomed from $76,000 in 1946 to $17 million in 1959. His permanent staff now numbers 130 and up to 1200 employees are on the payroll at peak season. The purchase and application of new equipment and techniques are his trademark of success. All projects, for example, are on a double shift and all equipment is used on a 12-month basis. This formula enables Replogle to achieve maximum production and meet close schedules.

Takes teamwork, key men, diversified operations

It takes a combination of ingenuity, know-how, and a nucleus of key personnel to set the pace of expansion that characterizes the C. F. Replogle Company. "Rep" prides himself for having a management team that's headed by himself, and backed up by Bernard Trecker, Controller; W. P. Yamarick, chief engineer; Charles Thompson, Operations Manager; and Jim Poston, Equipment Company manager.

Since 1946 he has built a chain of organizations that include Replogle Equipment Company, which leases and sells earthmoving and industrial equipment to other central Ohio firms; Circleville Manufacturing and Supply Co. which builds, repairs and rebuilds equipment; and Replogle Aviation Co. which provides planes for both Replogle project men and other area businessmen. Replogle's network of companies show the magnitude of this contractor's operations and personal business leadership.

Equipment plays Big Role

Mr. Replogle has pioneered many innovations in new equipment and in the rebuilding of equipment. Achieving maximum operating efficiency has been the continuing objective in all phases of his construction operation. The Equipment Company's $6 million of equipment, representing some 1300 units is subject to a rigid maintenance program that keeps downtime to a minimum. Some 75 men in this operation keep hourly check off lists and weekly graphs on all equipment. This highly efficient and detailed maintenance program represents an investment of better than $2.5 million a year. The inventory of major equipment that is shown below shows Replogle's contracting capacity.

35 cranes, shovels, backhoes — Austin-Western, Lima, Warner & Swasey, Lorain
41 crawler tractors — Caterpillar and International Harvester
14 rubber tired tractors — Michigan, MRS, Caterpillar
2 front end loaders — Michigan
31 motor scrapers — LeTourneau-Westinghouse, Allis-Chalmers, Caterpillar
17 pull scrapers — LeTourneau-Westinghouse, Caterpillar, Wooldridge, Replogle
14 motor graders — Caterpillar, Adams
24 rollers — Replogle, Buffalo-Springfield, Galion, Austin-Western
20 air compressors — LeRoi, Worthington, Ingersoll-Rand, Gardner-Denver, Jaeger, Kellogg-American
2 trenchers — Cleveland
8 heavy duty drills — McCarthy, Robbins, Damco
187 trucks — Ford, Chevrolet, Dodge, International, GMC, White, Autocar, Willys, Reo, Diamond T
12 sta. wagons & pass. cars — Ford, Chevrolet, Plymouth, Oldsmobile, Chrysler
21 flat bed trailers — Fruehauf, La Crosse, Kentucky, Rogers, Olson
6 dump trailers — Fruehauf
33 van trailers — Fruehauf, Brill
6 office trailers — Westwood, Mobile
2 tank trailers — Butler, Heil
6 dump bodies — Marion
4 grease units — Replogle
4 comb fuel & lube bodies — Replogle
3 pavers — Foote
1 cement mixer — Jaeger
3 concrete mixing plants — Noble-Replogle
13 cement silos — Noble-Replogle
4 spreaders — Jaeger, Maxon
7 finishers — Jaeger, Heltzel
26 dumpcretes — Maxon
4 concrete saws — Clipper
2 finishing screeds — Whiteman
2 drag floats — Jaeger
1 mesh bridge — Cleveland-Replogle
2 screening plants — Austin-Western
2 crushing plants — Austin-Western
3 sweepers — Littleford, Hough
2 stone spreaders — Jersey, Blaw-Knox
12 conveyers — Austin-Western, Replogle
15 concrete vibrators — Maginniss
78 generators — Kohler, Hobart, Replogle, Onan, Caterpillar,
56 welders — Lincoln, Hobart
7 pin drivers & clay spades — Thor
5 paving breakers — Thor, Worthington
8 jack hammers — Thor, Ingersoll-Rand, Chicago Pneumatic
19 air & gas tampers — Worthington, Barco, Jay, Ingersoll-Rand, Thor
23 Elec & air impact wrenches — Ingersoll-Rand, Chicago Pneumatic, Black & Decker
2 air hammers — Boyer, Union
30 saws — Skill, McCulloch, DeWalt, Superior
3 air drills — Sullivan, Gardner-Denver
3 wagon drills — Ingersoll-Rand
41 drag, clam & grapple buckets — Page, Esco, Owen, Blaw-Knox
14 concrete buckets — Replogle, Insley, Noble
8 drop hammers — Replogle
2 deisel pile hammers & extractors — Vulcan
2 rooters — LeTourneau-Westinghouse
82 pumps — Jaeger, Gorman-Rupp, Hardy
2 airplanes — Aero Commander, Cessna
57 2-way radios—mobil — Motorola
7 2-way base stations — Motorola
27 machine shops
283 misc

# of Circleville, Ohio success story

$1.6 million of equipment and over $6 million of materials purchased in a year

The magnitude of C. F. Replogle's expenditures for equipment and materials is reflected in the figures above. The need for new and improved equipment is constant, according to Mr. Replogle. $2.2 million of equipment was purchased in 1958 and $1.6 million in 1959 for purposes of expansion. Some 30%-40% of the company's gross goes for cement, steel, lumber and the many other materials required by the variety of construction projects worked on. Purchasing represents an intricate part of Replogle's operation. It takes the combined know-how, judgment, and experience of many men in a firm the size of Replogle's in order to make sound, profitable purchases.

Here's what C. F. Replogle says:

> **"We call in our operations and maintenance crews, project managers and superintendents who have a big voice in the company's operating efficiency. Cost records are reviewed on all equipment. All opinions, recommendations and facts are carefully considered and final decisions are then made by the management of the company."**

Creative and progressive policies in all phases of the contracting business are also C. F. Replogle's trademarks of success. On-the-job training sessions for personnel in operations, maintenance and engineering, for example, is coupled with promotion from within the ranks.

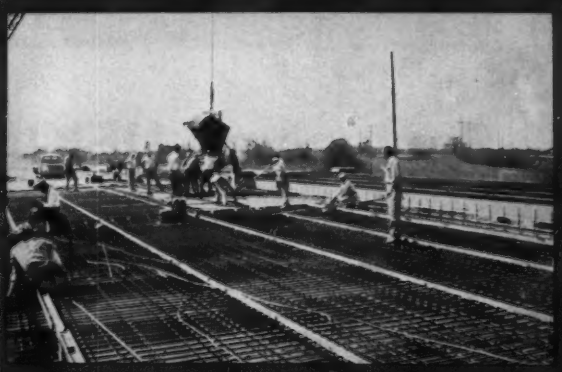
Swiftness of travel for key personnel and the delivery of maintenance parts to jobs is made possible by the use of two company planes and two full-time pilots. And very much a part of the firm's policies and management is C. F. Replogle's wife Virginia. In her role as secretary-treasurer of the firm, she assists the boss in running this successful organization.

CONSTRUCTION METHODS serves the contractor

Important men like C. F. Replogle and the other key personnel in this top contracting firm are constantly on the lookout for techniques, equipment, and materials that will improve their construction operations and increase profits. CONSTRUCTION METHODS serves the key men in the Replogle Co. and over 15,200 of the nation's important contracting firms like the Replogle Co.... firms that are changing the face of America.

Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION



Part of Replogle's fleet of scrapers and rubber tired tractors shown in action on one of its many highway projects.

Exclusive LUFKIN Chrome Clad® lines defy sand, mud, grit, and years of use!

Engineers and construction workers swear by 'em. Because the bold, black markings are *bonded* to steel . . . protected by layer on layer of electroplating . . . topped by a final coat of chromium!

Exclusive quality features are yours in *all* Lufkin tapes. For example:

Lufkin Super Hi-Way (above, left) is built to *last.* A real drag tape. Raised markings and protective borders are part of the tape! Can't come off! And special steel resists kinking. Available in 100′, 200′ and 300′ lengths.

50-ft. Anchor Chrome Clad (above, right) is available with easy-to-read markings in feet, tenths and hundredths, in genuine-leather, hand-stitched case. The handiest thing you can carry, on job after job.

See your Engineering Supply House now . . . for the Lufkin tape that's designed for *your* kind of work.

Measure for measure, the finest made . . .

LUFKIN

SAGINAW, MICHIGAN

PICTURE OF THE MONTH

This Job Requires Cool Nerves

• Highscalers on Glen Canyon Dam Project drill into shear wall of canyon to install rock anchors. Churning water below them is coming out of the right diversion tunnel. Concreting operations started in June, after the rock walls of the gorge had been prepared. The contractor, Merritt-Chapman & Scott Corp., has set up one of the fastest concrete pouring operations ever attempted, to pour 5,200,000 cu yd of concrete in 27 months. The dam will be 1,500 ft wide at the crest and 300 ft thick at the base, making it the third largest concrete dam in the country. Its 707-ft height will make it the second highest.

Washington Memorial Parkway contractor ahead of schedule

GULF MAKES THINGS

When the George Washington Memorial Parkway is completed . . . from Mount Vernon to Great Falls, Virginia . . . it will be one of the nation's most beautiful parkland drives.

Barnhill Construction Company of Tarboro, North Carolina, has the job of excavating and draining a difficult 1⅞-mile stretch of the parkway.

"We're primarily flatland people," says Everett Poindexter, Engineer and General Superintendent for Barnhill. "On this job we've got the hills and we've also got to preserve as much of the natural beauty as possible. This includes saving thousands of dogwood trees."

Even though such a garden-type project tends to slow dirt moving, Barnhill is well ahead of schedule. To achieve this, Barnhill keeps its equipment in prime condition and avoids mechanical delays with the help of Gulf products and service.

To insure peak performance, Barnhill uses Gulf® Super-Duty Motor Oil, Gulf® diesel fuel, Gulf® Multi-Purpose Gear Lubricant, and Gulflex® multi-purpose grease. When Barnhill moves to a new area, Gulf fuels and lubricants are delivered to the job site even before

Barnhill Contracting Company lubricates pushers at lunch time and rubber-tired equipment at the end of the day.

Melvin J. Cottrell (left), Project Superintendent for Barnhill, with Allen Ford, Gulf Sales Engineer. Capable engineering counsel is an essential part of Gulf service to every industry.

with help of Gulf® products and service . . .

RUN BETTER!

the equipment arrives. Information about parts supply houses and other helpful data on local conditions is provided by Gulf men. Says Melvin Cockrell, Barnhill Project Superintendent: "This Gulf service is most helpful to us."

On your next important project, see for yourself how Gulf makes things run better! Just call a Gulf Sales Engineer at your nearest Gulf office. Meanwhile, mail in this coupon for your free copy of the 88-page booklet: "Gulf Contractors' Guide"—the lubrication and maintenance manual for heavy equipment.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Please send copy of "Gulf Contractors' Guide."

Name_____

Title_____

Company_____

Street_____

City_____ Zone____ State_____

SP-9855

A fable for rabbits
(and others)

Once, deep in the forest, there lived an industrious Beaver. He not only felled trees and built dams, but, on the land he cleared, he grew produce for a hungry family of rabbits. How they loved his fat, juicy carrots!

But one day Father Rabbit found that by crossing over the river on a fallen tree he could buy carrots more cheaply from a Raccoon who lived on the other side. Soon he was racing back and forth across the river. The Beaver shrugged his shoulders and went into the dry goods business. Then came a terrible flood. The fallen tree was swept away, and the rabbits could only huddle on the bank and gaze longingly across the river. They went back to the Beaver, who said, "Sorry, folks, but I'm out of the carrot business. Could you use a dozen hand towels?" One cold day Mr. Beaver met Father Rabbit foraging for food. The Rabbit was near starvation. He looked at the Beaver with tears in his eyes and wailed, "Where were you when I needed you?" And the Beaver replied, "Where were you *when I needed you?"*

Whether your needs be carrots or steel, your safest, most reliable suppliers are right here at home. No one knows the needs of American steel buyers better than American steel makers. To serve you, and serve you well, is our primary concern—not just today and tomorrow—but year after year.

For quality steel of certified analysis, meeting appropriate specifications, you can rely on Bethlehem Steel for such products as reinforcing bars, wire and wire products, pipe, structural shapes, plates, carbon bars . . . hot-rolled, cold-rolled, and galvanized sheets . . . transmission towers and other fabricated steel, wire rope, and industrial fasteners.

And remember, our engineers are on call to help you solve your steel-working problems.

Steel *for Strength*
. . . Economy
. . . Versatility

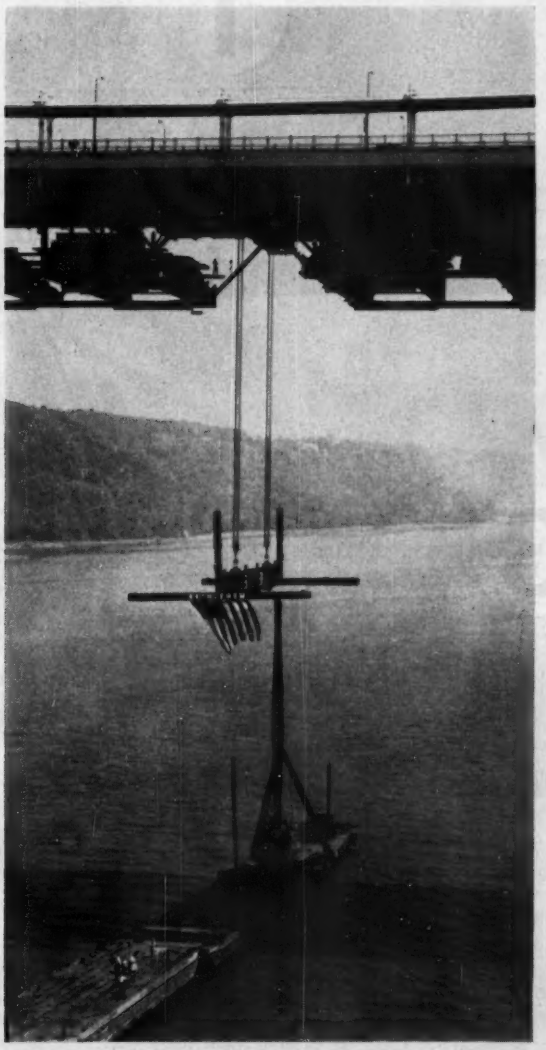
BETHLEHEM STEEL
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

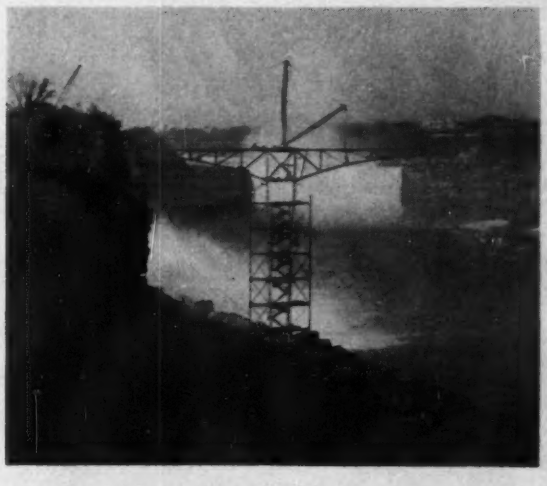
BETHLEHEM STEEL

Construction News in Pictures . . .

Continuous Loading

At Willard Dam project in Utah, a LeTourneau-Westinghouse grader and a Jeb-Loader with a 30-ft conveyor load 20 to 25 cu yd of earth per min in rough and spongy terrain. Willard Dam will contain 17,000,000 cu yd of material, of which 6,000,000 has already been placed. It's a Bureau of Reclamation job.



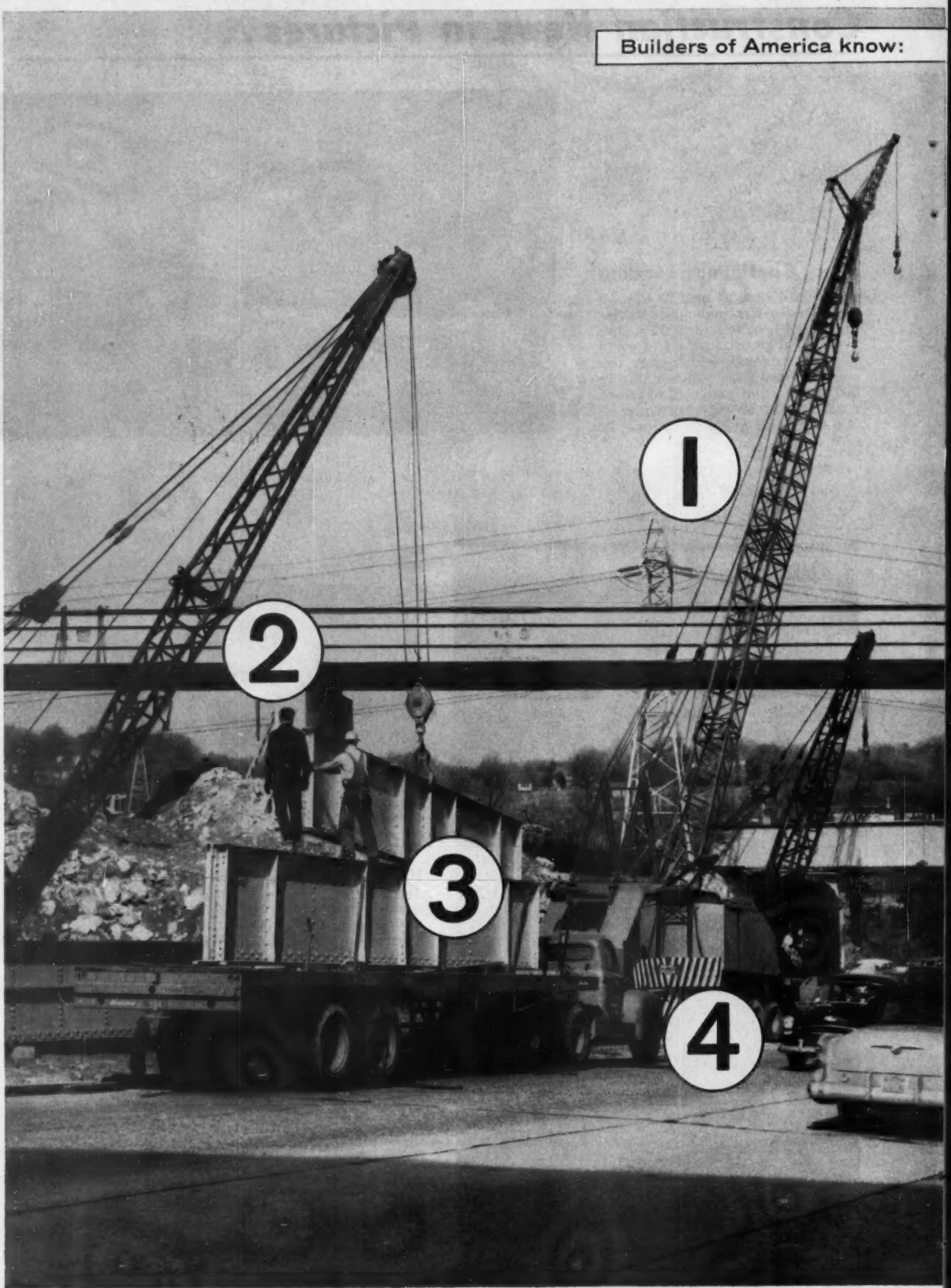


Aluminum Derrick

High above the Niagara River, just downstream from the Falls, an unusual aluminum guy derrick hoists a 90-ft-long, 15-ton truss section into place on the new Prospect Point Observation Tower. White Plains Iron Works, who have a $1-million contract to build the tower, designed the derrick especially for this job.

Final Link

Last section of structural steel for the six-lane lower deck of the George Washington Bridge in New York City is hoisted into place in the middle of the span. Hoists on traveling platforms suspended from the existing roadway lift the 62-ton section from barges in river. Contractor is Bethlehem Steel Co.


Builders of America know:
1
2
3
4

American Mutual means Better Protection . . . Lower Cost

Steel girders going up . . . but profits can come down if:

1. Crane boom strikes power transmission line
2. Man without hard hat is struck on head
3. Girder overturns
4. Traffic runs into equipment

Steel erection work is a hazardous operation. Men and machinery can fail . . . resulting in loss of life and limb. That's why you must give the most careful attention to every potential accident condition.

Many alert contractors benefit from American Mutual protection and its safety engineering services. The long-experienced men who render this service are specialists in their jobs and have the know-how to give you sound safety advice.

The AM Safety Engineer studies your project, searches out potential dangers, consults with the contractor and his superintendent, and suggests safety measures for the protection of workers and equipment.

Result: Safety counseling that helps you realize fewer accidents . . . fewer work stoppages . . . lower expenditures for workmen's compensation insurance. Jobs finished on schedule . . . greater profits for contractors . . . more favorable bids on future contracts. All very good reasons to call on the AM man for your many casualty insurance needs! American Mutual Liability Insurance Company, Dept. CM-4, Wakefield, Mass.

Our business is protecting your business . . . better

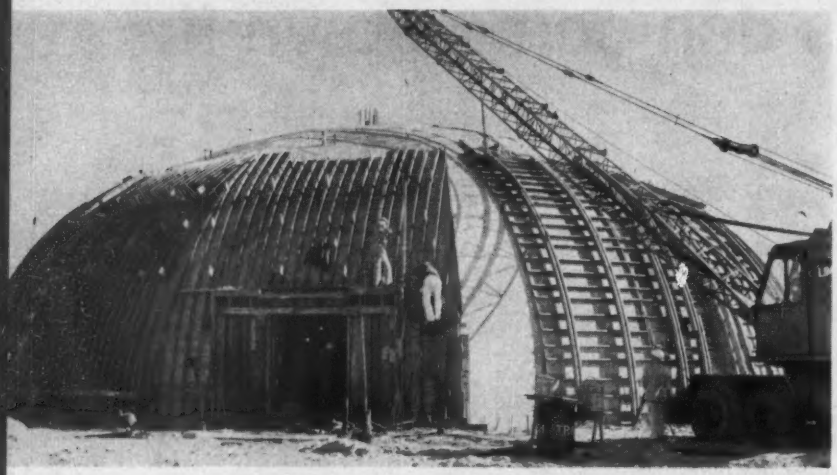
"The First American Liability Insurance Company" . . . a leading writer of Workmen's Compensation, all forms of Liability, Crime, Automobile, Group Accident and Health Insurance.

American Mutual

LIABILITY INSURANCE COMPANY

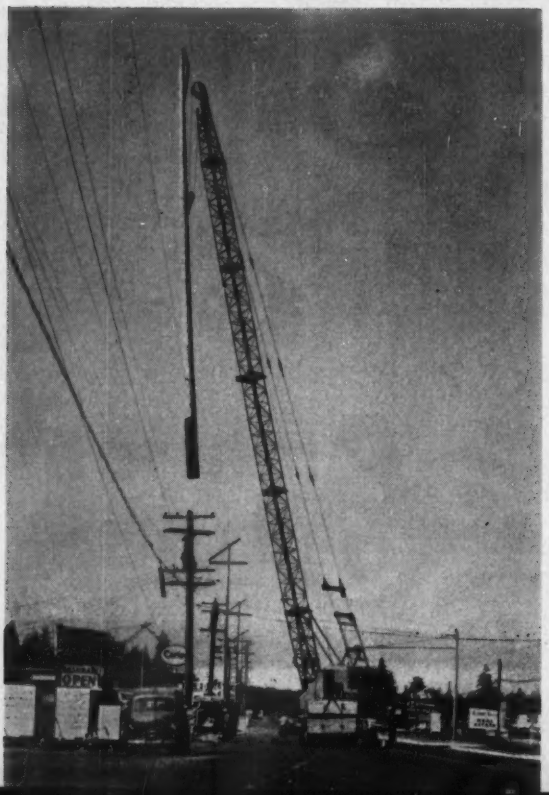
Big Cut

Equipment of W. S. Fowler Construction Co. from Oneonto, Ala., works on the deepest highway cut in Alabama. Located on an Interstate project near Springville, the cut is 160 ft deep and 1,000 ft wide at the top. Moving the dirt are LeTourneau-Westinghouse and Cat scrapers, two Cat tractors, and a Marion shovel with a 2½-yd bucket.



Rocket Control Center

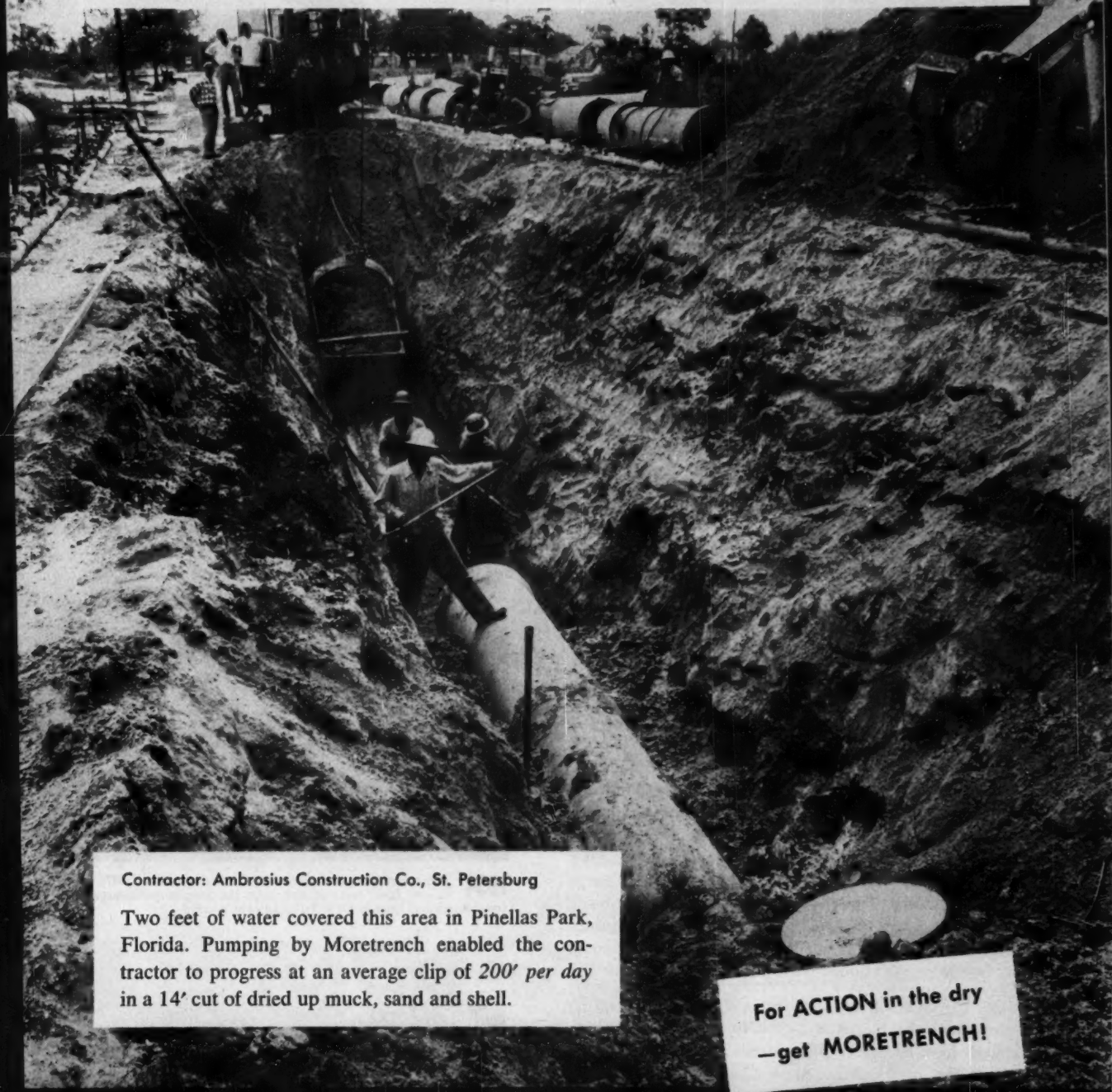
Lima crane removes form from a two-story concrete dome that will be the control building for a Saturn launching complex at Cape Canaveral, Fla. The contractor, Diversified Builders, Inc. of Montebello, Calif.; built four similar buildings for Titan installations and was able to use the same forms and general techniques for this contract.



Planting Poles

A P&H 27-ton truck crane places power poles between the wires of a 12.5-kv energized line in Snohomish County, Wash. It was safer and easier to lower them through the wires than to raise them from below. The Roth Construction Co. of Seattle first assembled the poles and ties on the ground, then planted them at the fast rate of 11 a day.

WET SWAMP BECOMES DRY SEWER
VIA MORETRENCH WELLPOINTS



Contractor: Ambrosius Construction Co., St. Petersburg

Two feet of water covered this area in Pinellas Park, Florida. Pumping by Moretrench enabled the contractor to progress at an average clip of *200′ per day* in a 14′ cut of dried up muck, sand and shell.

For ACTION in the dry —get MORETRENCH!

Moretrench Corporation

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HUbbard 9-7676
New York Tel.: CO 7-2283

4900 S. Austin Ave.
Chicago 38, Illinois
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Tampa 9, Florida
TAmpa 61-1881

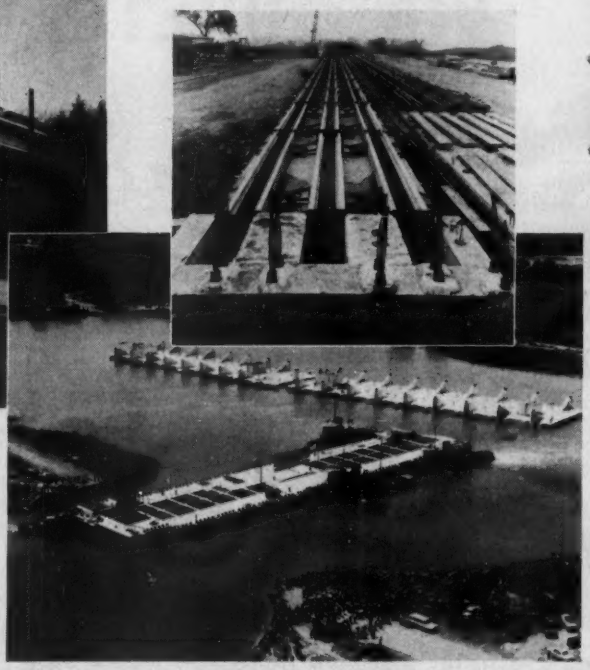
315 W. 25th St.
Houston 8, Texas
UNderwood 4-7774

Rockaway
New Jersey
OAkwood 7-2100

WESTERN REPRESENTATIVE: Andrews Machinery of Washington, Inc., Seattle 4, Washington
CANADIAN REPRESENTATIVE: Geo. W. Crothers Limited, Toronto, Ontario
BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd., Rio de Janeiro

1950 Walnut Lane Bridge. America's first prestressed concrete girder bridge. Beams were cast-in-place and post-tensioned. Center span is 160 feet. Lehigh Portland Cement was used exclusively on this project, and on the Washington aqueduct bridge seen on opposite page. Lehigh Early Strength Cement was used in the manufacture of all other prestressed units on these two pages.

Over 3,000 prestressed concrete stringers for New York's Pier 57 were cast in these beds. This project is credited with proving the economy of off-job-site mass production of pretensioned concrete units in the U. S.



1952 The prestressed stringers for the main deck of Pier 57, as well as the huge box foundations shown above, were fabricated at West Haverstraw, N. Y. and then moved 38 miles down the Hudson River to the pier's present location.

From WALNUT LANE...

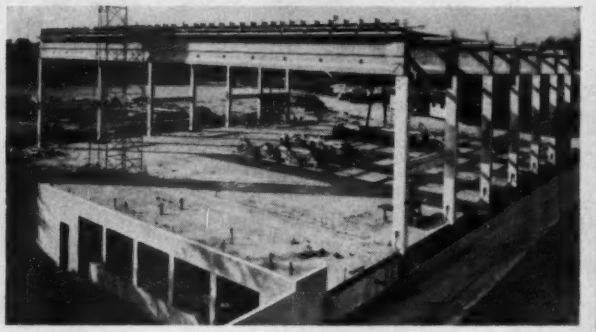
10 Years of Prestressed Concrete

Dedicated in the fall of 1950, Philadelphia's Walnut Lane Bridge is now recognized as the beginning of a major new industry in America—prestressed concrete.

The phenomenal growth of the industry since Walnut Lane is ample proof of the foresight and ability of designers, fabricators and contractors who saw *and did something* about prestressed concrete's advantages. Results—concrete structural members of lighter weights . . . longer, straighter spans with characteristic graceful appearance . . . large column-free floor areas for buildings . . . fast job-site assembly . . . all augmented by the inherent fire resistance and low maintenance of concrete. The future? It's limited only by the imagination.

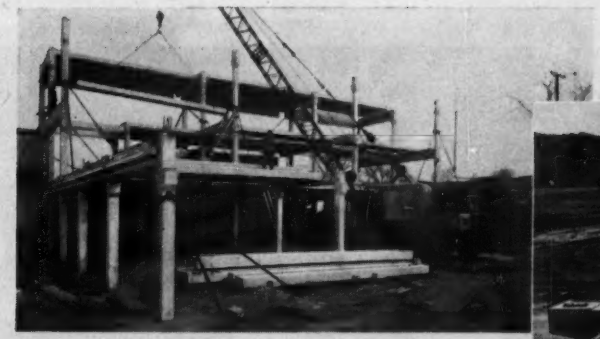
Lehigh played a significant part in the construction of the Walnut Lane Bridge. And in the 10 years since, Lehigh Cements have been used in hundreds of prestressed structures, a few of which are shown here. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

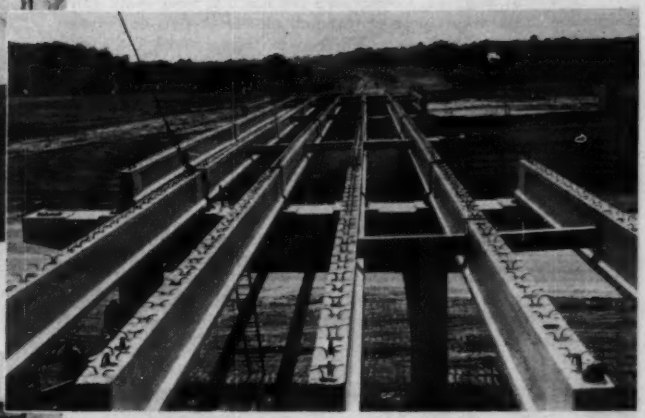


1954 The seven 120′ roof girders in Greensboro, N. C. High School Gym were at that time the longest prestressed concrete girders used in U. S. building construction.

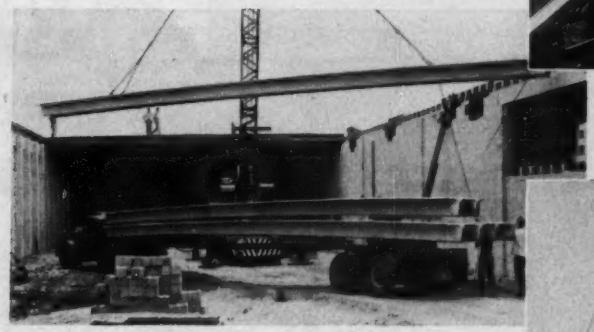
1955 This is the first prestressed concrete highway bridge to be built in Kansas. It is located in Lincoln County.



1956 Precast concrete columns support the prestressed beams, floor channels and roof channels of this 3-story addition to an industrial plant in St. Louis Park, Minn.



1959 One of the thousands of prestressed bridges which will become a part of our new Interstate Highway system. This one is near Jackson, Tenn.

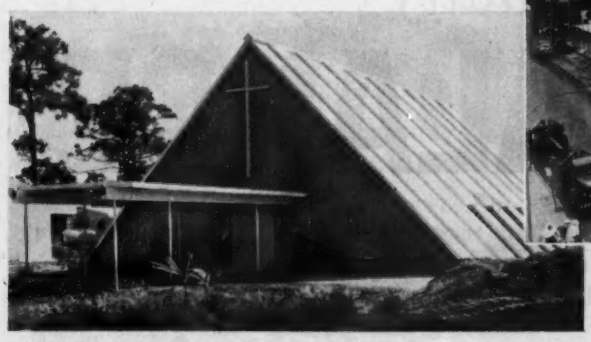


1957 Thirty-eight 60′ long prestressed double tee beams form the roof of part of this synagogue in Vineland, N. J.

1959 Over 400 prestressed box beams up to 95′ long were required for seven bridges for U.S. Route 1 bypass around Media, Pa.

1958 This 216′ cast-in-place, post-tensioned Washington aqueduct bridge at Little Falls, Md. was, at the time of completion, the longest prestressed concrete span in the U. S.

1959 182 prestressed concrete single tee beams (54′ x 8′) provide a 3½-story post-free parking facility for Forbes & Wallace Department Store in Springfield, Mass.



1958 Just 38 prestressed slabs were required for the roof-walls of this unique church in Ft. Lauderdale, Fla.

Foremans' choice! This INTERNATIONAL pickup keeps the job moving by transporting key personnel, critical supplies or what have you to those important locations. Comfortable cab has 5 ft. wide seats, extra head-room. Take your choice of standard all-steel bodies or "Bonus-Load" bodies up to 8½-ft. long. A 266 cu. in. displacement V-8 engine gives outstanding power and gas mileage.

Ideal for servicing equipment and transporting supplies! Hauling loads any place you have to go, INTERNATIONAL stake models increase the speed and efficiency of your operation to cut down on costs. Heavy-duty brakes and springs mean longer life on rough jobs; wide cab seats three men comfortably. True-truck V-8 engines up to 197 hp. are standard to give you outstanding acceleration, constant road speed. Sturdy, economy "sixes" or the new economical INTERNATIONAL D-301 diesel engine are also available. Stake models up to 25,500 lbs. GVW give you a choice of regular or all-wheel-drive — factory installed stake bodies from 8 to 16 ft. long.

Together or individually

THEY BALANCE

These INTERNATIONAL® Trucks are only three examples of the large variety of units that INTERNATIONAL offers the construction field. They can supply an ideal balance to your operation with their speed and maneuverability. Combined with INTERNATIONAL dependability and rugged design, this all results in helping you get the job done right and on time . . . and totals up to bigger profits.

Stop in soon and see your INTERNATIONAL Truck Dealer or Branch for more details on the trucks built to boost your profit picture.

Ready to "hotshot" crews to any hot spot! This rugged INTERNATIONAL all-wheel-drive pickup can step out and over any terrain your construction crews will encounter. Sturdy design and powerful power-line give them the ability to go where others couldn't offer you the same efficiency. Choose from two pickup body types – extra-capacity "Bonus-Load" or standard. They are all-steel from husky sides and ribbed floor to sturdy, sand-tight tailgate. Take your power from standard V-8 or true-truck "six" engines.

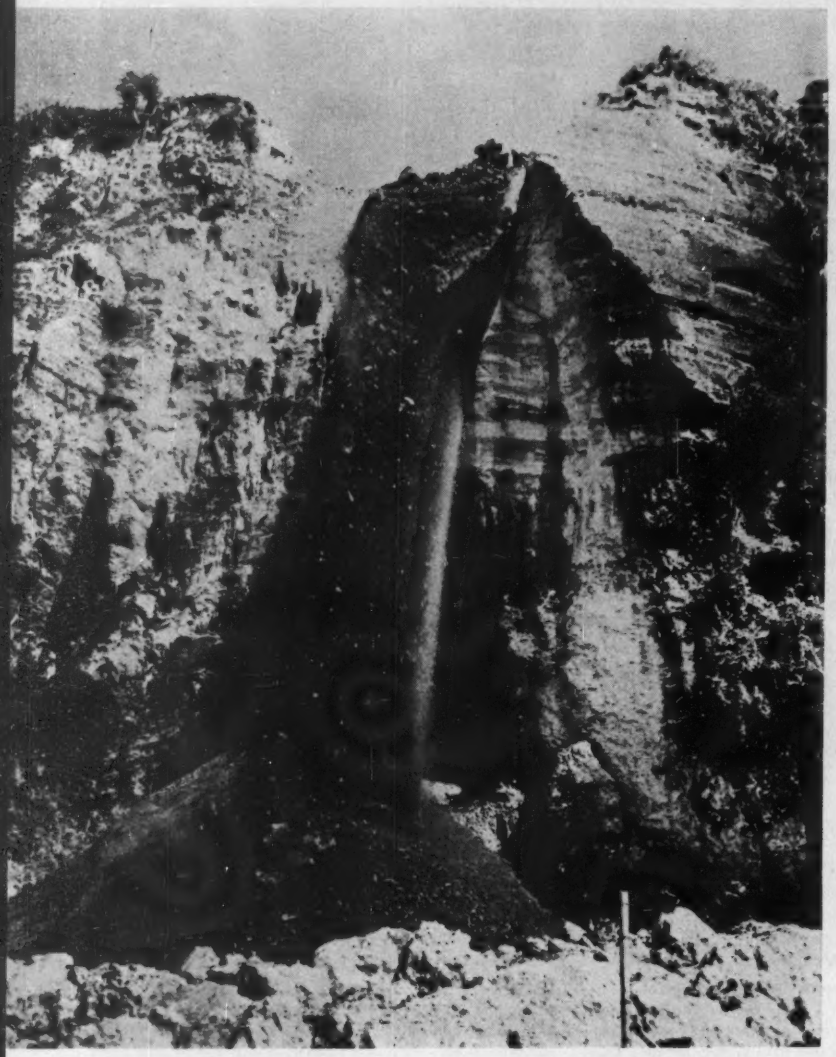
YOUR OPERATION

Extra traction where you need it! INTERNATIONAL Trucks with optional Powr-Lok gives your units the traction to get out of those tough places. By transferring extra driving power to the wheel that can get traction, your truck digs in and out without a tow... relieves the worry over your axle snapping.

INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE

INTERNATIONAL HARVESTER COMPANY, CHICAGO • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

Construction 'Round the World



In Fiji

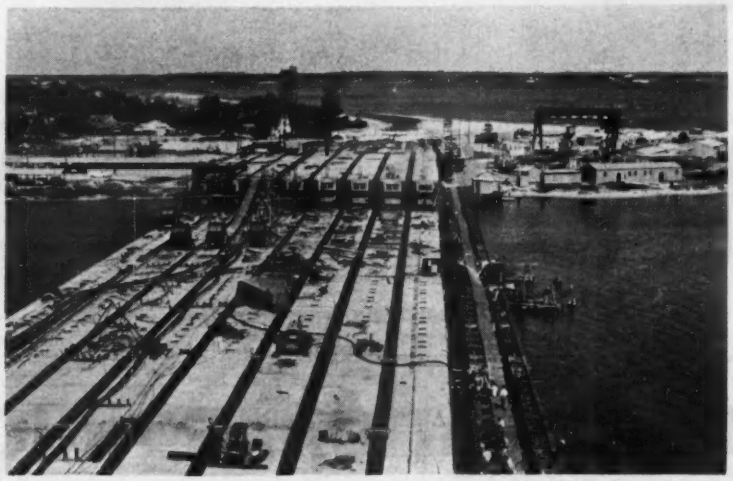
A barely visible Cat D8 dozer working on the hill's crest starts a landslide on the tropical island in the Pacific. Cascading earth marks the start of a construction project to remove Sealark Hill, which overlooks a scenic drive just outside the city of Suva. The tidy earth-moving job is being undertaken by Suva's Public Works Department.

In Mexico

Manitowoc Model 2000 shovel loads dirt and blasted rock into dump trucks during the construction of a rugged 36-mi section of highway between Toluca and Naucalpan. The shovel, owned by Constructora Morelos, S.A., averages 1,560 cu yd in a 10-hr shift. About 10,400,000 yd of excavation is involved, about half of which is blasted rock.

In Australia

Center span units 320 ft long are about to be lowered into position during the construction of Narrows Bridge, a continuous prestressed concrete structure at Perth. The 1,100-ft-long bridge is being built by Christiani & Nielsen and J. O. Clough & Son Pty. at a cost of almost $4.5-million for the Main Road Government of Western Australia.



Can Motorola 2-way radio cut my bills?

If you operate vehicles, you bet it can! Here's how: Drivers radio-in from their vehicles and are dispatched directly from job to job. The result: less backtracking, less "deadheading"—you get more for your money from men *and* vehicles—and you cut phone bills, gas and oil bills and maintenance bills.

But am I big enough for 2-way radio? Yes . . . even if you operate only one or two vehicles, 2-way radio saves money, mileage, time—gives you *more calls per day* —and much better service for your customers.

Can I afford it? If your drivers phone in just a few times a day, *your radio will pay for itself*. You can own or lease Motorola 2-way radio for less than $1.00 per day per vehicle. That charge covers everything—equipment, installation and maintenance.

Can you prove it? We'll be *glad* to! Call in your local Motorola representative (see Yellow Pages under "Radio Communications"). He will show you the dollars and cents proof of how Motorola can build profits for *your* business. He will give you a *demonstration of a nearby system in action*. Let him show you *why* Motorola equipment is more advanced, more reliable, more economical. Ask him about service and factory responsibility for your system. You'll see why, with the most experienced buyers—police, fire, railroads, utilities, etc., *Motorola outsells all other makes combined!*

GET THE FACTS . . . MAIL THIS COUPON TODAY!

Motorola Communications & Electronics, Inc.
A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 51, Ill.

☐ MAIL ME FULL FACT KIT ON 2-WAY RADIO
☐ HAVE REPRESENTATIVE TELEPHONE FOR APPOINTMENT

NAME_____ TITLE_____
COMPANY_____ No. VEHICLES ☐
ADDRESS_____ PHONE_____
CITY_____ ZONE____ STATE_____

Faster, more flexible hydraulic machines

HYDRAULIC SELF-WIDENING SPREADER-FINISHER WITH DIAGONAL SCREED SAVES BIG MONEY ON RAMP WORK

Actual savings up to $450 a day in overtime (500 batches placed in 8 hours instead of 10) have been reported by contractors who are using the Jaeger 12′-18′ all-hydraulic self-widening Spreader-Finisher with diagonally adjustable screed.

The only efficient machine for interchange paving. The Jaeger adjusts both traction wheels and spreading screw shaft by infinite hydraulic width changes for any flare from 12′ to 18′, without stopping. Metering screed adjusts by hydraulic power to any angle needed to insure positive concrete placement against the higher form on super-elevated ramps or crown of road. On curves, the crown of the screed can be raised or flattened by turn of a ratchet lever. Dual spreading screws are also hydraulically powered — are speeded up, reversed, raised or lowered by the mere touch of levers.

WIDTH FLARED FROM 12′ TO 18′ ON THIS INTERCHANGE: →

Hydraulic self-widening Jaeger Type JSX Spreader-Finisher, equipped with 12′ screed plus 36″ screed extensions *with infinitely adjustable end shoes at both ends,* laid all widths. Screed angle was hydraulically adjusted to changing super-elevation on the ramps.

For complete catalog, prices and delivery on any of these machines, see your Jaeger distributor or write us.

JAEGER

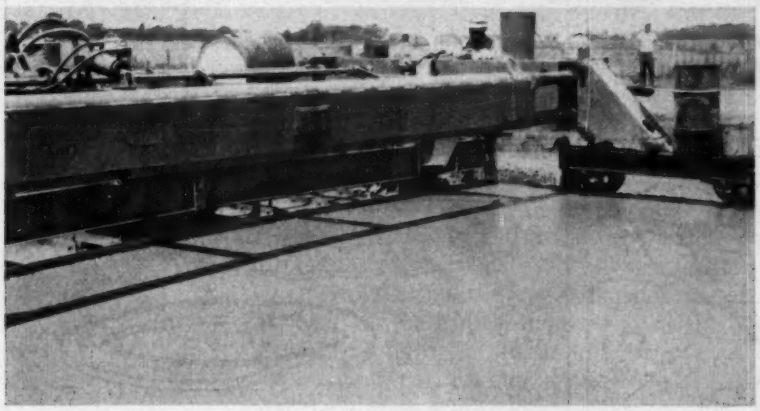
HYDRAULIC-SMOOTH PAVING MACHINES

The Jaeger Machine Co., 800 Dublin Ave., Columbus 16, Ohio

Jaeger Machine Company of Canada Ltd., St. Thomas, Ontario

World Wide Sales and Service through Jaeger International Corp., Apartado 137, Panama, R. P.

speed up your late season paving work

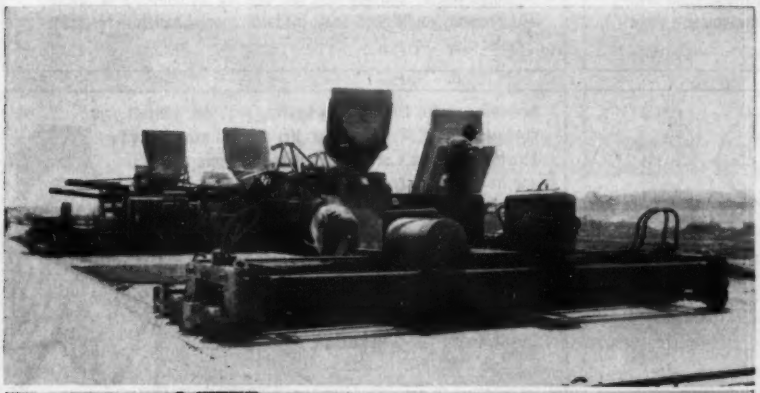


2 OPERATORS LAY SUPER-SMOOTH SLAB WITH 4-SCREED JAEGER TEAM

One man on 20′-26′ Spreader-Finisher remixes and spreads the piles with twin hydraulic screws, and strikes off base for mesh. On top course he also makes first finishing pass with 12″ oscillating screed — *all in one operation.* (For high production work, another Jaeger Spreader, without screed, is used ahead to place base.)

Second operator controls both the Jaeger Tandem Screed Finisher (with diagonal rear screed if pitched slab is being laid) and the Jaeger Finisher-Float which is towed and operated from the Finisher. Finisher-Float carries the fourth screed, plus 30″ transverse float pan for final kiss-finish. Screed and pan are suspended; bogey axles provide 4-to-1 correction. Final surface, as seen in unretouched photo, is ready for burlap—the smoothest pavement being laid today.

Machine is detachable from Finisher in 2 minutes. Screed and float pan are new "universal" type quick-crown-change to adjust to any specified crown. (Patent pending.)



2-MAN AIRPORT TEAM PLACES 3572 CU. YDS. A DAY OF CONCRETE STIFF ENOUGH TO WALK ON

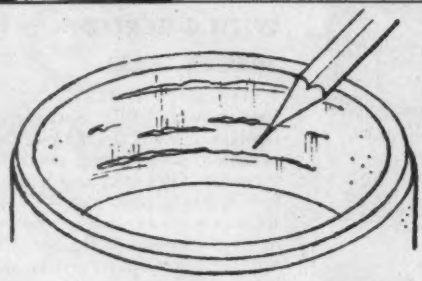
12,250′ of 300′ wide runway (408,333 sq. yds.) is a 4-paver job if you want to average 3572 cu. yds. a day. But spreading and striking-off with a Jaeger Screw Spreader equipped for deep vibration, and accurate finishing with a Jaeger all-hydraulic Type JH Finisher, is a 2-operator job with capacity to spare.

Pavement was laid in 25′ increments of 19″, 21″ and 23″ depth. Best day's run was 2525′ (4091 cu. yds.). Note texture of laid material ahead of the 20′-26′ self-widening Finisher.

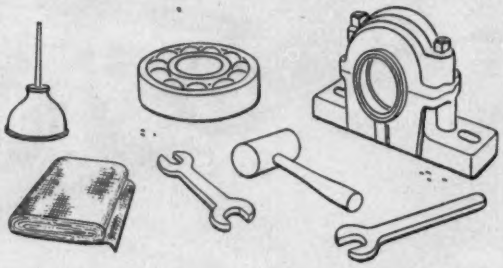
DISTRIBUTOR DAN the SKF bearing man, tells

WHAT DIRT DOES TO BEARINGS

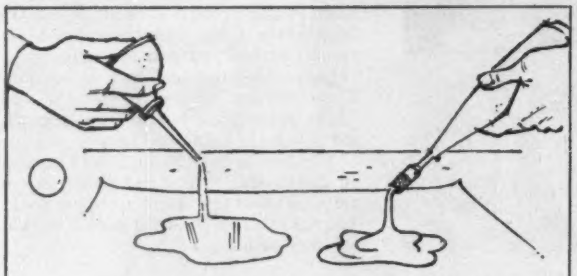
—and how you can help keep it out



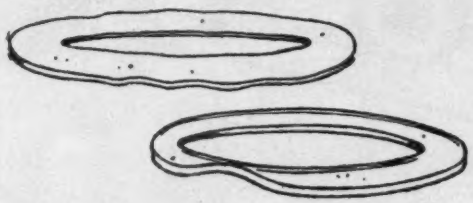
LOOK FOR POLISHED, CLEARLY-MARKED BALL OR ROLLER PATHS. They're sure signs that dirt is getting into your bearings, causing lapping of the parts and ultimate failures. To eliminate this problem, follow the steps shown here.



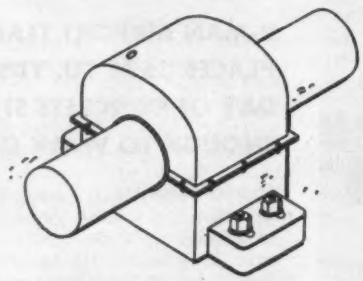
START WITH GOOD "HOUSEKEEPING." Work with clean tools in a clean area. Before you replace a bearing, clean the housing—both inside and out. Always handle a used bearing as carefully as you would handle a new one.



LOOK OVER YOUR LUBRICANTS AND LUBRICATING EQUIPMENT. Dirty oil and grease carry foreign matter with them, right into the bearing. So check them for cleanliness before you use them —and your grease guns and oil cans, too.



IS THE SEAL BENT OR WORN? If it is, dirt and dust and other foreign matter can get into the bearing. If moisture or water is present, you'll need seals made of special moisture-resistant materials.



WHERE DIRT IS A CONTINUAL PROBLEM, try shrouding the bearing housing in a metal box like the one shown here. It's inexpensive, easy to build and helps deflect dust and dirt away from the bearing.

Whenever you're baffled by a bearing problem, consult your Authorized SKF Distributor. His staff of experienced bearing specialists are always ready to serve you—and he stocks all types and sizes of the bearings you need, ready for immediate delivery.

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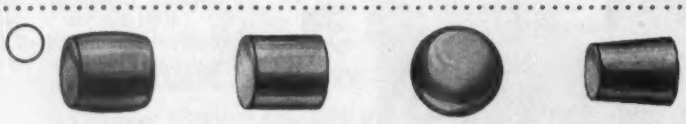

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Construction Methods AND EQUIPMENT

AUGUST, 1960

VOLUME 42 • NUMBER 8

HENRY T. PEREZ, Editor

Who Bungled?

THE JULY ISSUE of the Reader's Digest contains an article entitled "Our Great Big Highway Bungle." In it, author Karl Detzer takes a gratuitous slap at the interstate highway program.

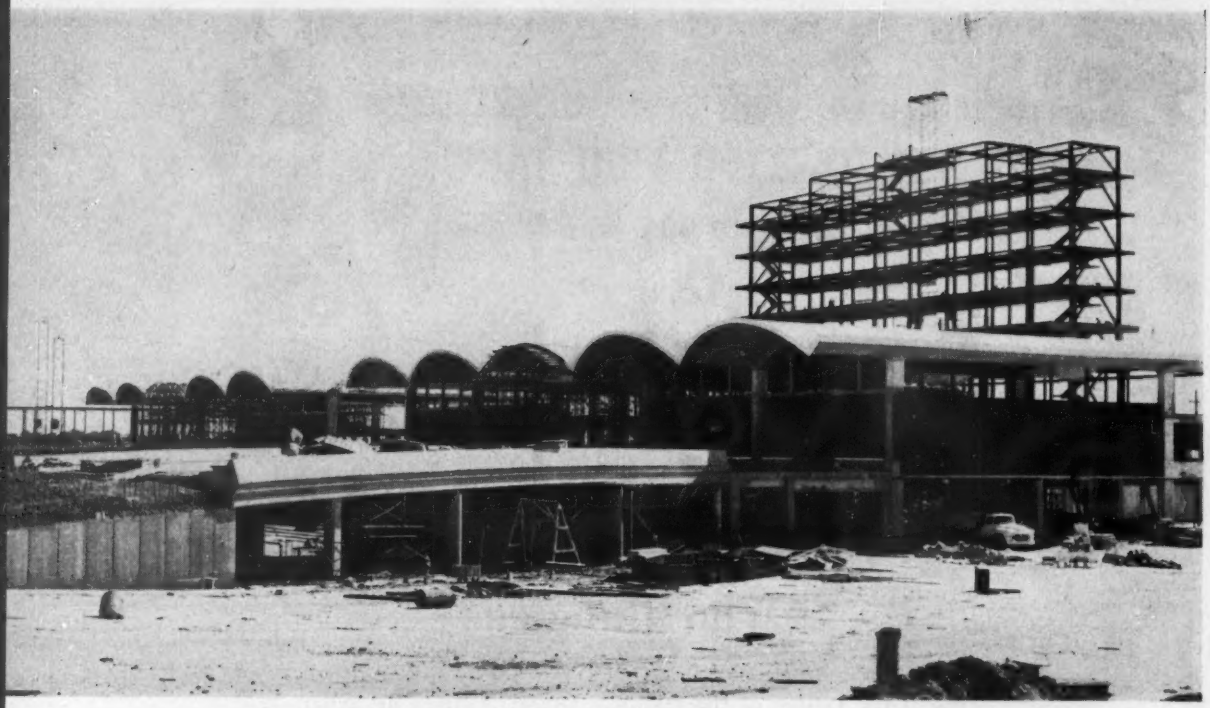
Read by the average layman, the article does, indeed, make the interstate program look bad. But to anyone reasonably well versed in construction industry operations, it would indicate that the author had an incomplete picture of how highways are planned, designed, and built. It also would indicate incomplete knowledge of the statutory relationship between the U. S. Bureau of Public Roads and the various state highway departments. At best, the article is guilty of sensationalism.

Nevertheless, the damage has been done. With a monthly circulation of more than 12,000,000 copies, the Digest has raised a large and dark cloud over the world's greatest public works program. This cloud must be dispelled.

As one sound approach, the Bureau of Public Roads has made an "analysis of various charges, together with the actual facts in each case, for the purpose of correcting errors and providing pertinent facts omitted in the magazine article."

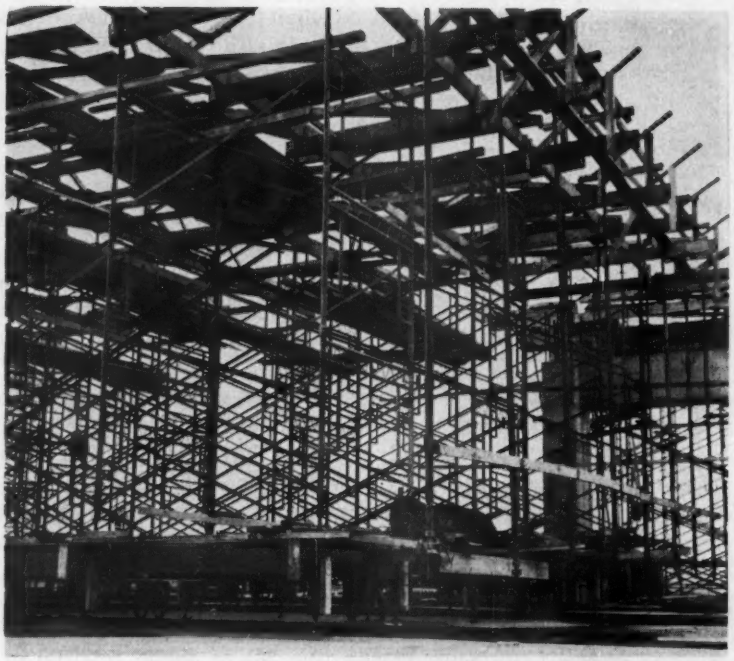
The Bureau's analysis takes issue with at least 16 separate points raised by the Digest piece. It concurs in the basic thought (but presumably not with the language) of only one—Detzer's plea, "Let every citizen who has specific evidence of tax dollars going down the highway program's multibillion dollar rat-hole report that evidence to [U.S.] Congressman John A. Blatnik now!" With that, every right-thinking person will agree.

And every person who has a stake in the construction industry should get a copy of the point-by-point analysis (Bureau of Public Roads, Washington 25) to aid in rebuttal of the misleading items in the Digest's story. When errors are corrected, missing facts added, and half-truths placed in proper perspective, the points cited by the Digest certainly don't add up to a "great big highway bungle." Rather, in this case, it was the magazine article that bungled.

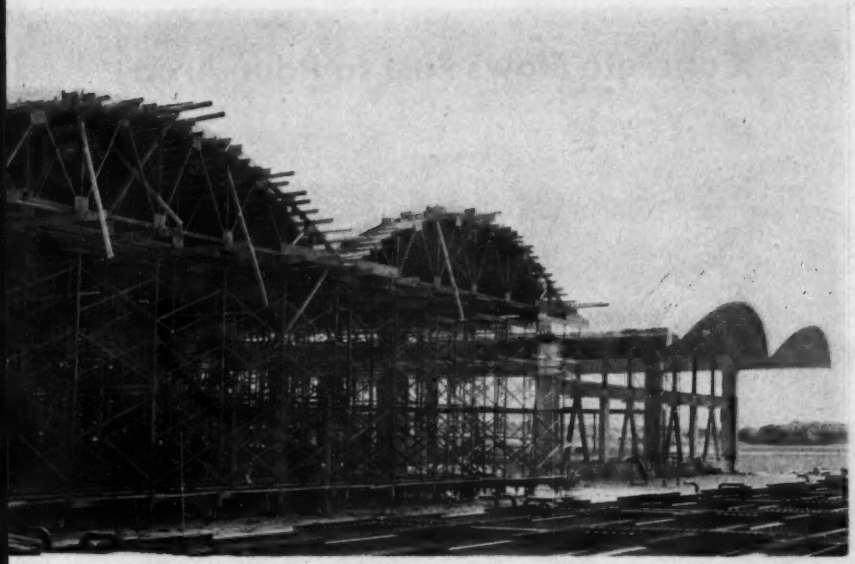


Rolling Scaffolding Holds

This subcontractor made just two sets of forms for the eleven 127-ft-long barrel arch shells that cover a new terminal building at Atlanta's Municipal Airport. Wheels at the base of the scaffolding holding the forms make the units mobile. Each of the four sections forming a shell roll along channel tracks to the next double arch pour. Stripping, moving, and setting up the forms for a pour takes about one week.

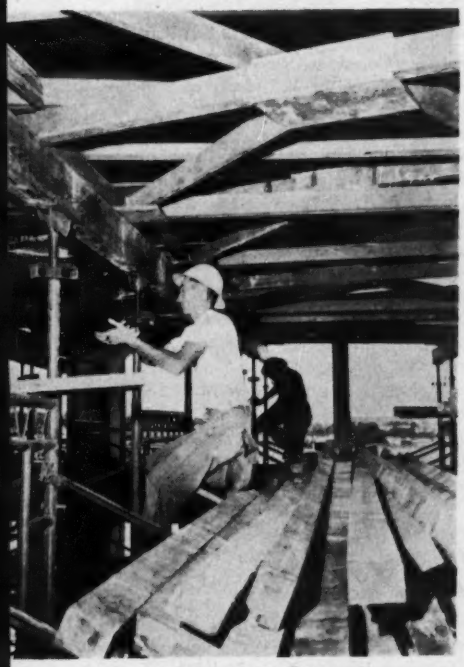


WHEELS MAKE 'EM MOBILE — Steel frames hold 14-in. wheels in place beneath heavy 4x12 joists seating the base of scaffold legs. Screw jacks on top of 4x4 sills laid on floor slab lift joists to take the weight off the wheels when forms are being set up.



TWO AT A TIME—Each of two sets of shell forms consists of four sections: two for the center of each shell and one for each of the cantilevers at the ends. Contractor moves forms from one end of row to other, skipping a shell between each double pour.

Barrel Shell Forms



STRIPPING GOES FAST—Four weeks after shell pour, a workman lowers screw jacks in top of scaffold legs to drop bowstring trusses holding purlins and sheeting. After stripping forms, crew will lay trusses flat on top of scaffolding so unit can roll.

AS THE SCAFFOLDING ROLLS, so goes the job. And on construction of eleven barrel arch shells of a terminal building at Atlanta Municipal Airport, rolling scaffolding cuts forming costs an estimated 50%.

Using just two sets of forms, prime contractor Blount Brothers Construction Co. of Montgomery, Ala., are concreting all eleven barrel arch shells in only seven pours.

Each 127-ft-long shell has a 25½-ft cantilever section at one end and a 24-ft cantilever section at the other end. Ten of the barrel arch shells have a radius of 38 ft, 7 in.; radius of the larger shell in the center of the row is 44 ft, 10 in. Four 19-ft-high columns support each shell. A complex splayed system of reinforcing ties the columns into the shell and into the 3-ft-wide and 20-in.-deep beams that angle out from the tops of the columns and run transversely across the shell.

Concrete Forms Corp., Chattanooga, subcontractor on the formwork, erected the shoring for a shell in four sections. The center of the shells was formed in two sections, and the cantilevers at each end made two more separate sections.

Crews first placed 4x4 sills on the floor slab to hold small screw jacks. On top of these jacks, 4x12 joists hold the base plates of the Concrete Form Corp. Time-Saver scaffolding frames that make up the shoring. Fittings holding 14-in. wheels that make the units mobile frame into these heavy joists.

Screw jacks in the top of the scaffolding legs hold double 2x8's, which support wooden bowstring trusses at 6-ft centers. Concrete Forms also fabricated these trusses. Purlins consisting of 3x4's at 12-in. centers on top of the trusses hold ⅝-in. plywood sheeting that serves as forms for the barrel shell.

Crews first erected forms for two complete barrels at one end of the row of shells. The planned pouring sequence calls for skipping the next shell and setting up forms for another double arch pour next to the large center shell, and then two shells at the end opposite the initial pair. Finally, three separate pours will take care of the two small shells previously skipped, as well as the large center shell, which they save for last because it requires modifying the formwork.

Subcontractor Wilhoit Steel Erectors of Columbia, S. C., places the reinforcing in the barrel arch shells with a 10-ton Bucyrus-Erie Hydrocrane and a 70-ton P&H truck crane that was on hand primarily for erecting the steel frame of another building. It takes the crew about 5 days to install reinforcing; the large shell takes 50 tons.

The reinforcing bars are arranged in four layers: two transverse layers of No. 3 bars, one longitudinal layer of No. 5 and No. 8 bars, and a diagonal layer of No. 5 bars confined to the corners of the shell. As many as 54 heavy No. 11 bars reinforce the four 2x3-ft columns that support each shell.

Here's the pouring pattern that Blount Brothers follows: concrete a double arch, wait four weeks, strip, move forms, set up forms, place reinforcing, and pour again.

Columns for the shells are partially poured before the arch forms are set up. When the scaffolding is rolled into a new bay, 13 ft of the 19-ft columns is already poured. The last 6 ft of the

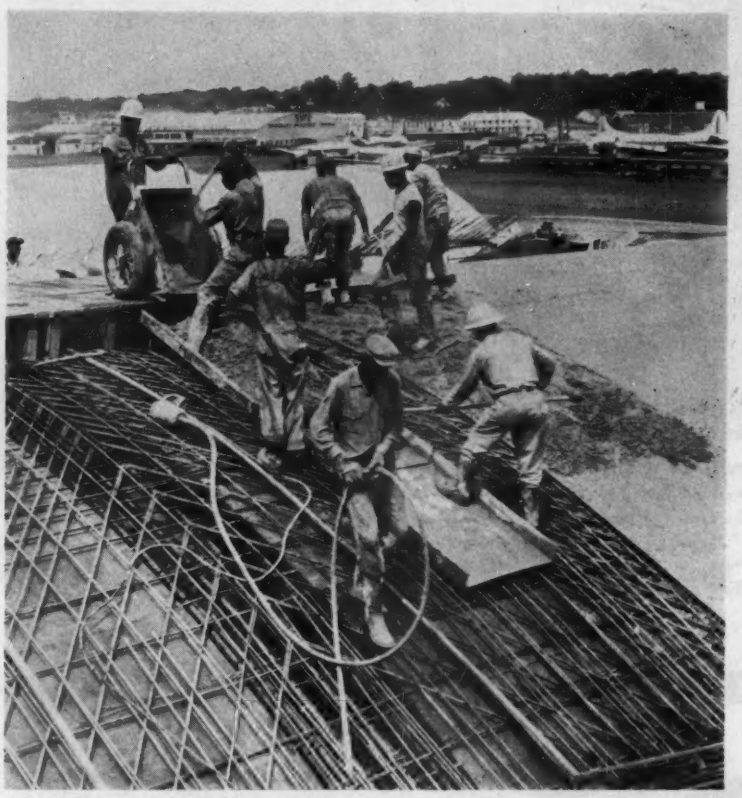
Concrete Flows Fast to Pour Area

columns is poured just prior to pouring the shell itself.

Each shell takes about 100 yd of concrete. A double arch pour calling for 200 yd of concrete takes a crew of 38 laborers and 8 finishers about 6 hr. Poured at a 1½-in. slump, the 6.3-bag mix reaches a design strength of 3,000 psi after 28 days.

Two 60-ft-high Buck HoisTowers raise concrete from transit-mix trucks at floor level to the crown of the shells. Two stationary 1-yd hoppers feed 6-cu-ft Goldblatt buggies that carry concrete to the pour area along a timber runway. The 8-ft-wide runway, which runs the entire length of a shell, is made up of 1x8 planks on top of 4x4 bucks that raise the planking off the shell to a height of 8 in. at the crown and 12 in. at each edge.

To place concrete, Blount Brothers uses chutes made of 12-gage black iron. Chute sections are 5 ft long and 3 ft wide, with sides turned up 4 in. Strands of 1-in. link chain fitted with hook and eye connections fasten the sections of chute together and make removal of sections easy as the pour progresses from valley to crest of the shell.



CHUTES PLACE CONCRETE—Chutes made of 12-gage black iron carry concrete from runway at crest of shell to the valleys. Two hoist towers at end of shell supply concrete.

From One End to Other

Pouring starts at the end opposite the concrete hoppers and proceeds section by section to the other end of the shell. The crew moves the two pouring chutes—one on each side of the runway—along the shell as they go.

Stow and Master vibrators—one to each pouring chute—are inserted in the pour at about 1½-ft centers to work the stiff mix through the four layers of reinforcing. An old wheelbarrow frame makes a conveninent portable mount for the vibrator motors.

To get the required 4-in. thickness of the shell, 1x2-in. wood strips are set at 8-ft intervals on scads to serve as screed boards. The crew finishes the concrete by hand with wood floats and sprays 30-W Horn curing compound on the pour to complete the job.

Stripping, moving the scaffolding transversely from one barrel to the next, and setting up the forms takes a crew composed of six carpenters and six laborers 6 working days. Repositioning the scaffolding system from one double arch pour to another involves four separate moves. The large center section divides in half and is moved in two operations. The two cantilever support systems require two more moves per pouring setup.

First step in preparing a scaffolding unit for a move is lowering the bottom screw jacks, transferring the weight to the wheels. Then the crew runs down the top screw jacks to free the bowstring trusses. They strip the purlins and sheeting and stack them neatly on top of the scaffolding frames. Then, with the trusses laid down flat on top of the scaffolding, the section is ready to roll.

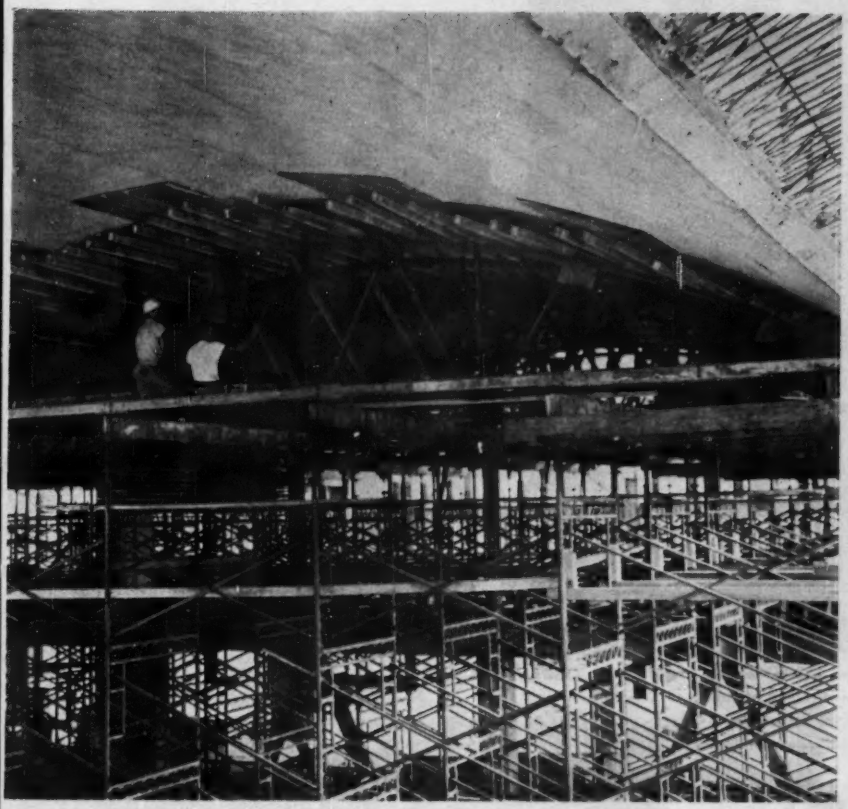
Three 4-in. channels laid web down on the floor slab serve as tracks for the 14-in. wheels attached to the bottom runners of the scaffolding units for the two center sections of a shell. Two tracks suffice for each of the cantilever end sections.

Three hand-powered winches pull the sections on the moves. Distance traveled is sometimes as much as 150 ft. The steel winching cables are attached to the side of the scaffolding opposite the winches so there will be no pull-out pressure on the winch-side struts.

The moves carry the complete forming package along the channel tracks to the next setup. Forming the next pour involves a minimum of handling of the trusses, purlins and sheeting.

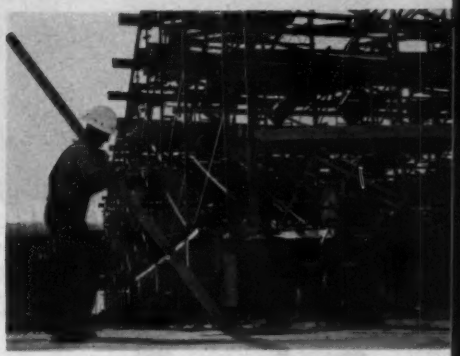
Men on the Job

Project manager for Blount Brothers, the prime contractor, is Charles Richman. Robert L. Perks is job superintendent. J. H. Jones is superintendent for Concrete Forms Corp. Roberts & Co. Associates, Atlanta, are architects and engineers.

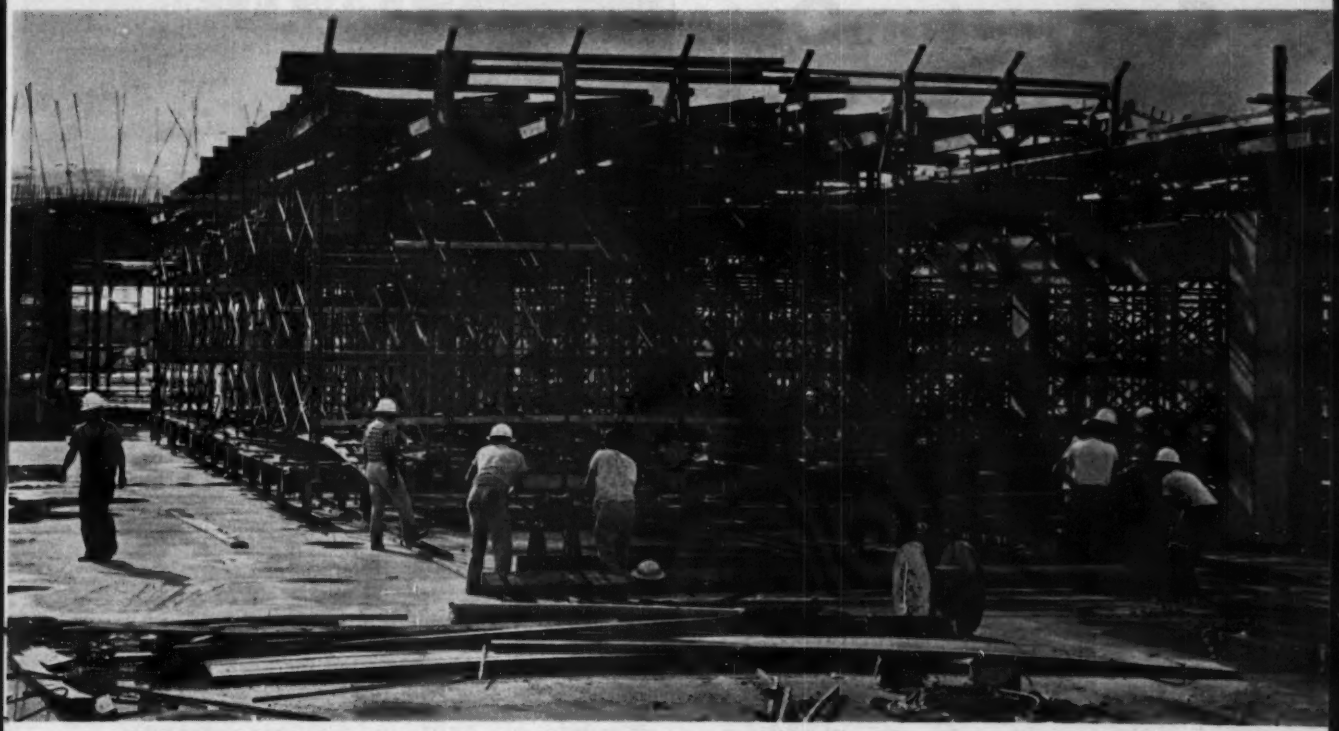


TRUSSES HOLD FORMS—Bowstring trusses at 6-ft centers held by double 2x8 joists on top of the scaffolding support 3x4 purlins on 12-in. centers and plywood sheeting.

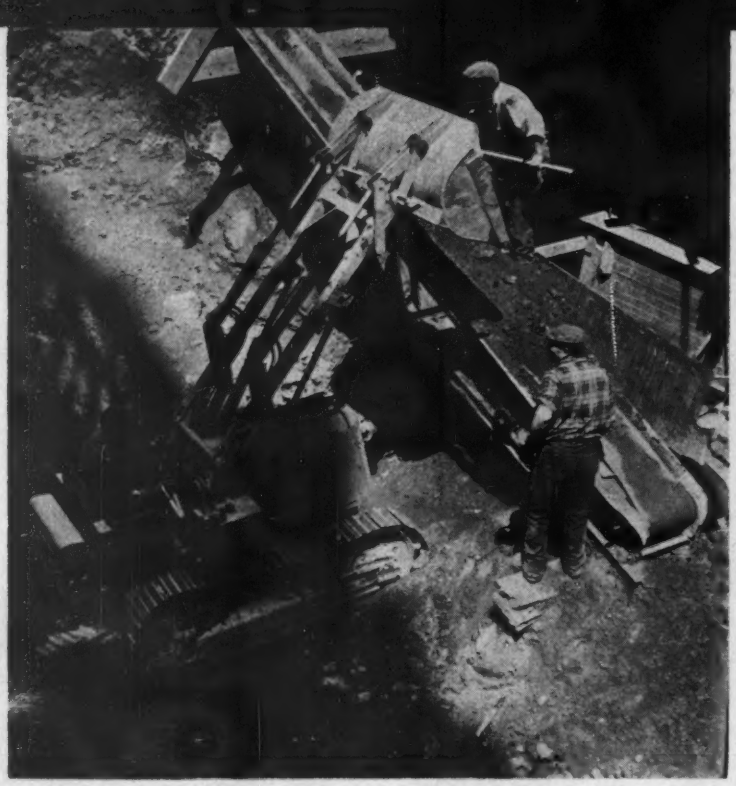
GREASING THE WAYS—Workman sprays oil onto channels that serve as tracks.



KEEPING ON LINE—Jimmying under a joist with a 2x4, workman keeps unit on line.



MOVING INTO PLACE—Three hand-powered winches provide the muscle to move the forming package. Winch lines run to far end of scaffolding to prevent pullout pressure.



FIRST MOVE—An Oliver OC-46 loader with a ½-yd bucket dumps dirt and boulders onto a Mulkey belt conveyor that moves material out of the hemmed-in excavation.

HAND HAUL—Workman pushes one of four Jackson buggies down narrow service alley, the only link between the hole and street. Buggies are loaded from conveyor.

Relay Team Digs Contractor Out Of Tight Spot

LAST MOVE — Michigan 125A tractor shovel loads one of three Mack rear-dump trucks that haul earth away. Contractor manages to move about 60 yd in 8-hr day.

THAT DOUBLE-PLAY COMBINE, Tinker to Evers to Chance, had nothing on the contracting firm of Ingram & Greene of New York. The foundation specialists adopted their own relay system, loader to conveyor to buggy, to get them out of a tight spot.

The tight spot is a 30x50-ft foundation for a gym behind St. David's School in Manhattan, which is hemmed in by buildings on all sides. There is only one way to move out earth for a 20-ft-deep excavation: down a 6-ft-wide service alley that adjoins one side of the school. To use the alley, the contractor had to get an easement from the neighboring apartment house. And the easement stated that no mechanical equipment could be operated in the alley.

Two pieces of equipment handle earthmoving in the hole. One is a crawler-mounted Oliver OC-46 front-end loader with a ½-yd bucket that just managed to squeeze down the alley. The other is a 40-ft-long Mulkey belt conveyor. The conveyor is driven by a gasoline engine and supported by timber bracing. One end is near the bottom of the hole; the other at an opening in the alley. Here's how the relay works:

The loader digs out dirt and boulders and dumps them on the conveyor. The conveyor moves the material to the alley where it spills off into one of four Jackson hand buggies. As soon as one buggy is loaded, a workman pushes it to the street about 75 ft away, and the next buggy is placed under the end of the conveyor.

At the street, where the buggies dump the earth, a Michigan 125A rubber-tired tractor-shovel scoops up the material and loads it into one of three Mack 12-yd rear dump trucks for hauling away. The system requires a lot of handling, but Ingram & Greene Superintendent Jim Reilly says they manage to move about 60 yd in an 8-hr day.

G. C. Ryan Construction Co. is general contractor for the gym.

SCRAPERS MOVE BULK OF MATERIAL—A Caterpillar tractor-drawn pan scoops a heaping load of material with the help of a push-dozer. Working much of the time in close quarters around the numerous structures, scrapers handle the bulk of the excavation.

Unusual Structures Highlight Big Road Job

Tricky structures, including a railroad bridge built from the top down, dot an interchange job that sprawls alongside a river in New Jersey.

HERE'S a highway job that has a little bit of everything, including just about anything in the line of structural complications that a roadbuilder is likely to come up against. It's a short section of Route 21 near Clifton, N. J., where this feeder leading north from Newark intersects Route 3, a main outlet of New York's Lincoln Tunnel.

The section is only about 1 mi long, but Franklin Contracting Co. of Little Falls, N. J., will get $7½-million for building it. It's the largest contract ever awarded by the New Jersey State Highway Department. The dual lane highway will run close to the west bank of the Passaic River, passing under an existing bridge carrying Route 3 over the river. A railroad cuts the job in half and confines the work area where the 12 ramps of a complex interchange sprawl in a crazy pattern at the intersection of the two heavily traveled routes.

As the cost of the job indicates, it's loaded with structures. The booms of cranes working on them jut above the horizon to mark the job like flags dotting a golf course. An observant rubberneck can count as many as ten at times. Here's a few of the more unusual jobs they are doing:

- Driving sheetpiling to hold a 30-ft-deep vertical cut so a retaining wall can be built where a local road will cantilever out over Route 21 as much as 27 ft.
- Placing wood frame templets for sheetpiling to be driven on both sides of an old unreinforced concrete sewer that will be protected with the addition of a concrete saddle.
- Driving 36-in. caisson shells down to bedrock so that master piles anchoring a sea wall made of sheetpiling can be seated in the rock.

And a weekend visitor to the job will be able to watch another interesting example of tricky structural work—building, from the top down, a temporary bridge that will carry the double tracks of the DL&W Railroad over Route 21. Each weekend the contractor rips out one of the tracks and drives pile bents through the embankment. Later they cap the piles with prefabricated steel header and beam units that span up to 37 ft between bents.

WET EXCAVATION—Crane with clamshell loads truck with wet gravel from river.

When this operation is complete they will dig out the material under the seven temporary spans—in effect, tunneling under the tracks—to make room for building two new abutments and a center pier. These will eventual-

PILEDRIVING—After railroad crew rips up track at each bent location, piledriving subcontractor drives 14BP73 piles with Lima 802 rig equipped with a Model 520 Link-Belt Speeder diesel pile hammer.

ly support two plate girder spans that will be erected on temporary bents on either side of the bridge and rolled into place in four sections.

Not even the earthmoving is routine. Work in progress on the structures breaks up the job so much that most of the earthmoving has to be done piecemeal. But excavation, which will total about 590,000 yd, is now 50% complete.

Material being removed at the south end of the job is mostly previously placed fill. The contractor had to bring in some slag from steel mills in Pennsylvania to backfill around water and sewer lines they uncovered in this area. At the other end of the job, sand mixed with some gravel predominates.

It's primarily a scraper operation. Three Caterpillar DW21's and three Caterpillar tractor-drawn pans move the bulk of the material. But along the river bank, a team of two Lorain cranes with 2-yd clamshells handles wet excavation, loading a fleet of rear-dump trucks.

A Cat tractor shovel usually finds work cleaning up around a 40-ft-deep cut where Route 21 ducks under River Road at the north end of the job. Dozers spread the small quantity of material needed as fill at the extreme south end of the job.

The railroad bridge is the divider splitting the job in two. Fortunately, excavation is about balanced on either side. The contractor is now digging out the material underneath the temporary structure holding the tracks. An International TD-20 tractor fitted with a Drott 3-yd four-in-one bucket removes the material. When this excavation is complete, Route 21's right of way will be open from one end to the other, and scrapers will be able to haul the length of the job out of the 40-ft-deep cut near the north end. That will about wind up the earthmoving.

They Work Weekends

It took five weekends to place the temporary spans beneath the railroad tracks. To avoid interruption in commuter traffic during the week, crews were allowed to work only from 6 pm Friday until 6 am Monday, when the track had to be back in place. They took advantage of every minute of the 60 hr allotted to them, working through the night with the help of portable light plants that illuminated the area.

The temporary bridge consists of seven spans, varying in length from 22 to 37 ft, for each of the two tracks. Each span is supported at its ends by its own bent made up of four 14BP73 piles. Center to center spacing between bents is 1 ft, 10 in.; piles in each bent are on 3-ft centers.

They worked on one side of the bridge at a time, ripping up only one track each weekend. After a railroad crew had taken up track and ties at each bent location, Franklin dug out a bench in the ballast with a front-end loader to a depth of about 7 ft. Into this pocket they inserted a 6-ft-wide prefabricated timber box to hold the nearly vertical walls of the pocket and prevent their caving because of vibrations during piledriving. This preliminary work set the stage for driving the piles.

A subcontractor, Allied Pile & Boring Co., Inc., of Jersey City, handled the piledriving. They brought in a Lima 802 crane fitted with 120-ft leads and a Model 520 Link-Belt Speeder diesel pile hammer. Equipped with a 5,000-lb ram, this hammer delivers up to 30,000 ft-lb per blow at a rate of 80 blows per min.

Average depth of the piles, which are driven to bedrock, is about 80 ft. Driving time per pile averaged only 10 min. Allied found the diesel hammer especially effective when driving was hard. It took two weekends to drive the total of 56 piles for the first track they tackled, only one weekend for the other side.

After all eight piles in a box enclosing a double bent were driven, a 1-in.-thick steel plate, about 14-in. square, was welded

Temporary Bridge Goes Under Railroad

BACKFILLING — Workman with Wacker tamper compacts backfill on top of cut-off piles. Box shores walls of pocket during piledriving.

EXCAVATING—With temporary spans carrying railroad tracks completed during weekends, an International TD-20 with a Drott Four-in-One bucket excavates bays between bents.

to the top of the cutoff pile to serve as a pile cap. With all piles capped, Franklin backfilled the box, tamping the ballast with gasoline powered tampers. They left the box in place to prevent disturbance later when piles were being driven for the adjacent bent on the other side.

While piledriving was in progress, Franklin pre-assembled the temporary spans. Each of these consist of a pair of twin 36-in. WF beams on 5-ft centers and held together by 18-in. channel diaphragms at the ends. The pre-assembly also included a 14BP73 header to fit on top of the pile caps, and rail ties connected to the top flange of the beams.

During the next two weekends, following completion of the piledriving, Franklin placed the pre-assembled sections. They tackled one side at a time. First they dug a bench along the entire length of the bridge to a depth of about 5 ft, just below the top of the pile caps, to make room for the spans. Then they placed the spans, bolting the headers to the pile caps and splicing the ends of the beams together.

Next step was to excavate beneath the spans. The plan drawn up by the railroad calls for excavating one bay at a time, jumping from one end of the bridge to the other until finally the center bay is clear. Before the front-end loader moves on to another bay to continue excavation, a crew places steel cross-bracing across the piles in each bent. In alternate bays they also place cross-bracing between the pile bents at each end of the span.

Building Permanent Span

When excavation is complete down to roadway grade, about 12 ft below the beams, the contractor will begin building the permanent abutments and pier for the new span. They will excavate a 5-ft-deep trench across each of the three bays where the footings will go in, leaving the material undisturbed around the piles at each bent.

Then they will place sheeting at each side of the trench to hold the walls of the trench during piledriving. To avoid working in the close quarters under the temporary spans, they'll prefabricate sheeting and shoring by attaching steel sheetpiling to opposite sides of three 20-ft-long boxes made of heavy timber frames. They'll simply drag the units into place in the trench.

Then Allied will drive H-piles to bedrock to seat the footings. Working with little head room under the bridge, they will drive 12-ft sections and splice them to make the required length, using a rig without leads to do the job.

When the piers are complete,

INSTALLING CROSS-BRACING—Crew welds cross-bracing tying together piles as excavation proceeds from bay to bay.

American Bridge's erection crew will roll the permanent plate girder spans into final position from the temporary bents on which they will be fabricated on either side of the bridge.

In an 800-ft-long stretch where Franklin must build a retaining wall to hold the steep cut beneath a local road that cantilevers out over Route 21, they drove a

SHEETING FOR RETAINING WALL — Welder connects steel raker to walers bracing row of sheetpiling at bottom of steep 30-ft cut. Retaining wall to be built between sheeting rows will hold bank.

line of sheetpiling along the section from the top of the bank. The length of the sheeting is 50 ft. Excavation down to roadway grade about 30 ft below the top of the sheeting then followed. They left a berm along the foot of the sheeting to hold it temporarily. Next the Lorain 80 crane with a McKiernian-Terry C 3 hammer drove another line of sheeting at the bottom of the cut, paralleling the first line but about 15 ft distant from it.

When this work is complete they will dig a trench inside the two rows of sheetpiling to the bottom of the retaining wall footing, about 10 ft below the road grade. As this excavation proceeds they will install cross bracing to hold the sheetpiling at the sides. Three levels of 8-in. WF beams will span across the 15-ft gap, running between 18-in. WF walers held in place at each side by 6x8-in. timber spacers placed vertically between the webs of the walers. All connections in the bracing system will be welded.

When concrete is poured, boxes placed around the slanting cross bracing members will leave voids in the retaining wall. They will be filled in later, after the bracing has been shifted to the sides of the wall. The sheetpiling beneath the cantilever slab will remain in place; backfill will fill the space between the sheeting and the retaining wall.

Saddle Beefs Up Sewer

The Passaic Valley sewer, a horse-shoe shaped concrete conduit about 14 ft wide and 11 ft high runs underneath the new highway along a 400-ft section opposite the retaining wall. Before any construction work began, Franklin inspected the condition of the sewer by sending a crew through the critical section in a rowboat. They found many cracks and holes. Franklin agreed to reinforce the damaged section under a $\$1/4$-million extra added to the original highway contract.

They are driving a double row of sheetpiling, one on each side of the sewer, at about 5 ft distant from the edge of its bottom slab. A wood frame templet guides the sheeting during driving. They will uncover the arched top of

continued on page 98

TEMPLET GUIDES SHEETING—Crew removes timber frame templet to place it at next section where sheeting will enclose footing.

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The Condition of this Obligation is such that Whereas Seller has sold to Buyer the below-described parts assembly or assemblies originally manufactured by Caterpillar Tractor Co. and reconditioned in accordance with practices recommended by Caterpillar Tractor Co.:

DESCRIPTION	PART NUMBER	SERIAL NUMBER	SALE PRICE

And Whereas Seller guarantees each said parts assembly against unsatisfactory performance due to defective material or workmanship for _____ days after the date of sale shown below (herein referred to as the guarantee period), the obligation under this guarantee being only to repair or replace, as Seller may elect, any said assembly which proves defective in material or workmanship under conditions of normal use during the guarantee period at Seller's expense (including cost of all necessary materials and labor) up to a maximum of the lesser of Five Thousand Dollars ($5,000.00) or Seller's price, with respect to each said assembly, except that the cost, if any, of transporting each said assembly from and to Seller's place of business shall be paid by the Buyer.

Now, Therefore, if Seller, its successors and assigns shall in all respects well and truly perform the obligation under the guarantee recited above, then this obligation shall be void, otherwise to remain in full force and effect.

THE ABOVE GUARANTEE IS VOID, AND SELLER SHALL BE UNDER NO OBLIGATION THEREUNDER, IF CLAIM IS NOT MADE TO THE SELLER WITHIN THREE (3) DAYS AFTER DISCOVERY OF THE DEFECT UPON WHICH THE CLAIM IS BASED.

You can have complete confidence in any Parts Assembly Exchange or Rebuilt Unit carrying the dealer's new Bonded Buy label. You'll receive a Guarantee Bond, backed by the Lumbermens Mutual Casualty Company of Chicago, Illinois, giving the guarantee conditions agreed upon at time of sale. This is further evidence that a Caterpillar Parts Exchange or Rebuilt Assembly is in first-class condition—another way of expressing the careful and thorough workmanship that goes into each of these reconditioned assemblies.

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SERVICE TIP: Never allow your present machine components to become worn to the point where reconditioning is impossible.

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Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CRANE PLACES FRAME — Truck crane places timber frame box that will guide sheeting driven on both sides of an unreinforced concrete sewer that passes beneath a 400-ft-long stretch of highway.

the sewer, digging out the overburden carefully with clamshells. Then a crew will place a concrete saddle around the sewer, from near the bottom of each side to the crown of the arch. Average thickness of this saddle will be 1 ft. Finally they will backfill the trench to complete the job.

Master Piles Anchor Wall

There is still another interesting structure being built in this section—a sheetpiling sea wall running for a distance of 800 ft along the bank of the river. Where depth of soil over the bed rock is not enough to provide sufficient toehold for the sheetpiling, Allied is placing master piles seated securely in bedrock to anchor the sheeting. (Altogether, the job calls for 2,250 tons of sheeting, all of it supplied by Bethlehem Steel.) Master piles are placed within the protection of an excavated pipe caisson, which is removed later for re-use.

First a Lima 802 with a Vulcan No. 1 hammer drives 36-in.-dia caisson shells with a wall thickness of ½ in. down to bedrock. Spacing of the shells is about 10 ft; average depth is about 24 ft. A two-level steel templet positions four shells at a time for driving. Material within the driven shell is broken up by a 9-ft-long chopping bit with four 2-in.-thick cutting edges. A 26-in.-dia bailing bucket removes spoil from the caisson.

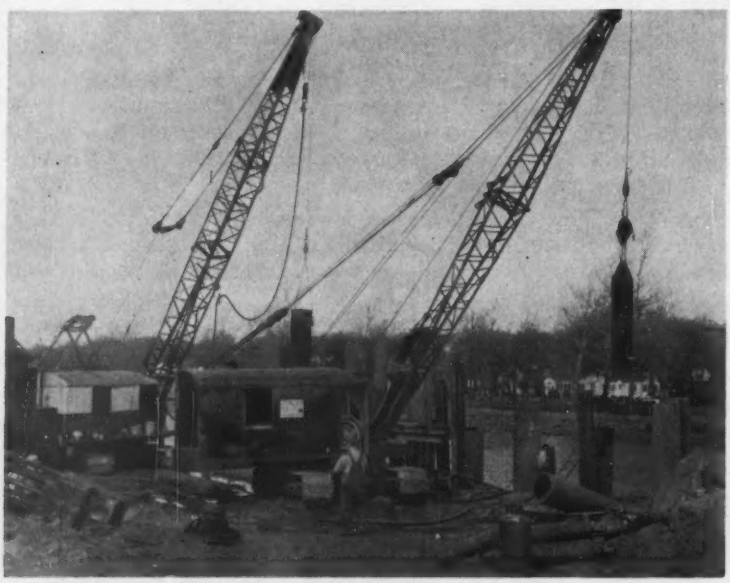
With the cutting edge of the shell seated in bedrock, Allied drills a 10-ft-deep socket into the rock to anchor the master pile, a 21WF142 section. Concrete poured into the shell is filled with fine sand, which is tamped to fill all voids as the shell is removed. The sand holds the master pile in its proper place. Position of the master pile must be within 1 in. of plan location to match the spacing of the sheetpiling sections that will be driven between them.

In addition to the master piles, tie rods anchored from 60 to 100 ft behind the face of the sea wall help hold the sheeting, which must withstand a considerable surcharge pressure from the highway running close along the bank of the river.

Franklin started the job last September. They were fortunate in being able to work steadily through most of the winter. Bad weather caused few delays except for a few weeks in late February and early March when heavy snow blanketed the area. Just about on schedule now, Franklin expects to start paving in July, in time to complete the job late this fall.

They will batch concrete at their plant in Little Falls, N. J., headquarters of the outfit and only 5 mi from the job site. The proximity of their home base gave Franklin a decided edge in bidding the job. They won it by undercutting the next lowest bidder by more than $300.000.

In charge of road work for Franklin is superintendent Andy Lugano. His assistant is Joe Fox. Bill Peto is superintendent in charge of bridge work; Bill Dunn and Wally grant are his assistants. Joe Armstrong is engineer. In charge for the New Jersey State Highway Department are Joseph Ertle and Austin Schenk.



RIGS DRIVE CAISSONS — Two Lima rigs place 36-in.-dia caisson shells that will hold master piles anchoring sheetpiling sea wall in rock.

55% LESS KICK TO THE OPERATOR -BUT 100% POWER AT THE BIT!

Le Roi Shock-Absorbing Sinker Drills

If you want to see a startling increase in drilling footage, equip your drillers with Le Roi shock-absorbing sinker drills!

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Let your drillers try them. Call your Le Roi distributor — or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

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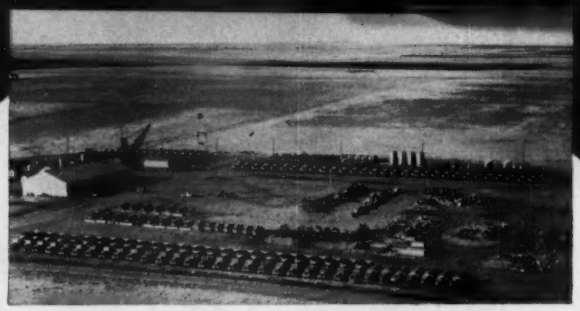


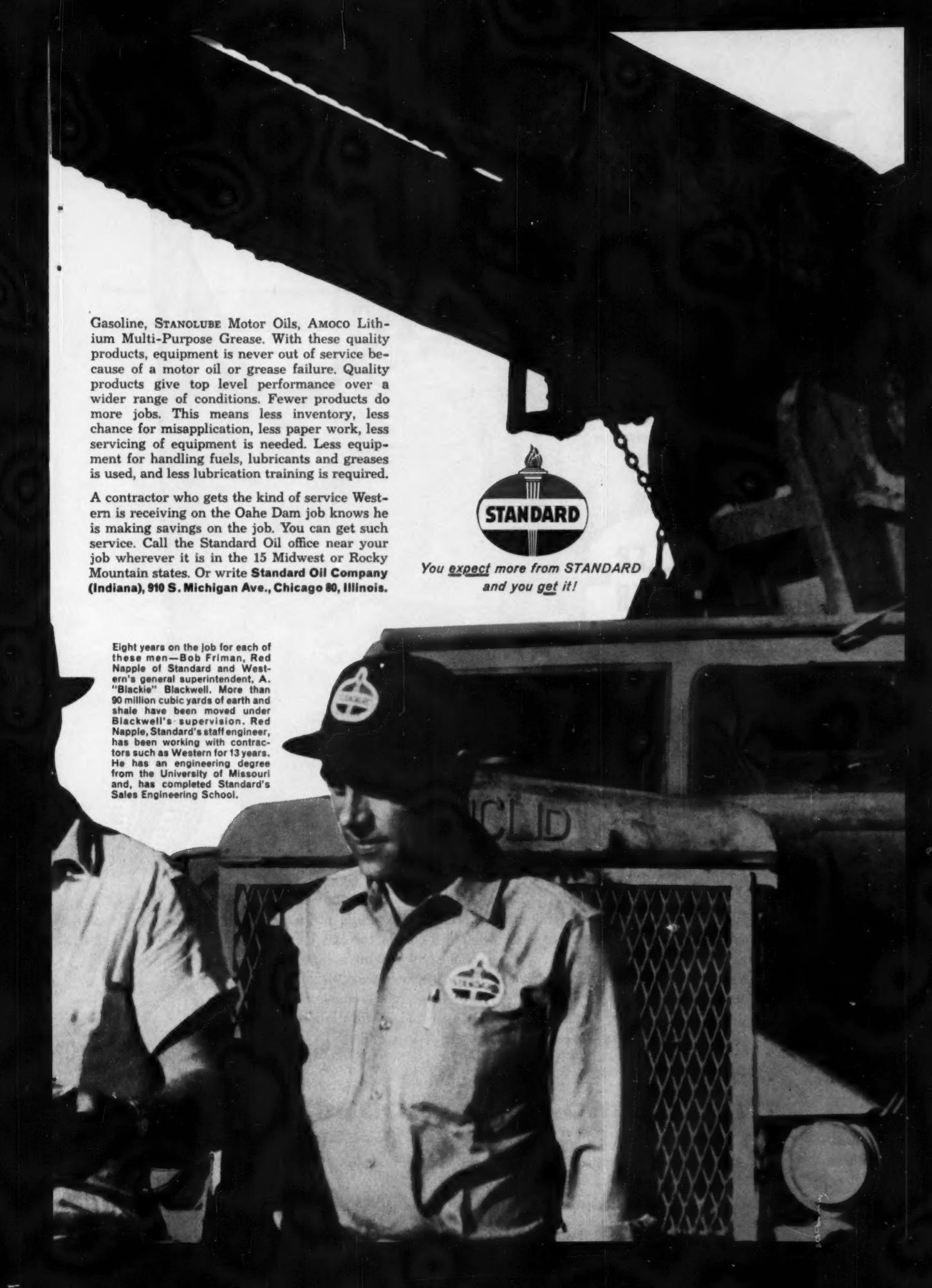
Multi-million dollar picture. Here is part of Western's equipment lined up for inspection at Oahe Dam. Photo shows 86 trucks, 23 bulldozers and crawler pieces and 9 scrapers.

2 ways Standard Oil helps Western Contracting Corporation save on Oahe Dam job

In eight years on project, 10 million gallons of diesel fuel and gasoline have been delivered on time and when needed

Saving No. 1 F. L. "Red" Napple, Standard Oil staff engineer, and Standard Oil agent Bob Friman have been serving Western on the Oahe Dam project since the first dirt was moved in 1952. This means continuity of service that can be invaluable to a contractor. Red Napple has an engineering degree plus more than 13 years' experience in just this kind of work. Western thus has the equivalent of another engineer helping them. Napple is located at Aberdeen and Friman at Pierre, both only a few miles from the job. Western works around the clock. So does Standard. Bob Friman and his men make deliveries 24 hours a day, winter and summer. Western never has equipment down while waiting for deliveries of fuels, lubricants or greases.

Saving No. 2 Western uses only quality products —Standard's Diesel Fuel, STANDARD RED CROWN



Gasoline, STANOLUBE Motor Oils, AMOCO Lithium Multi-Purpose Grease. With these quality products, equipment is never out of service because of a motor oil or grease failure. Quality products give top level performance over a wider range of conditions. Fewer products do more jobs. This means less inventory, less chance for misapplication, less paper work, less servicing of equipment is needed. Less equipment for handling fuels, lubricants and greases is used, and less lubrication training is required.

A contractor who gets the kind of service Western is receiving on the Oahe Dam job knows he is making savings on the job. You can get such service. Call the Standard Oil office near your job wherever it is in the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**

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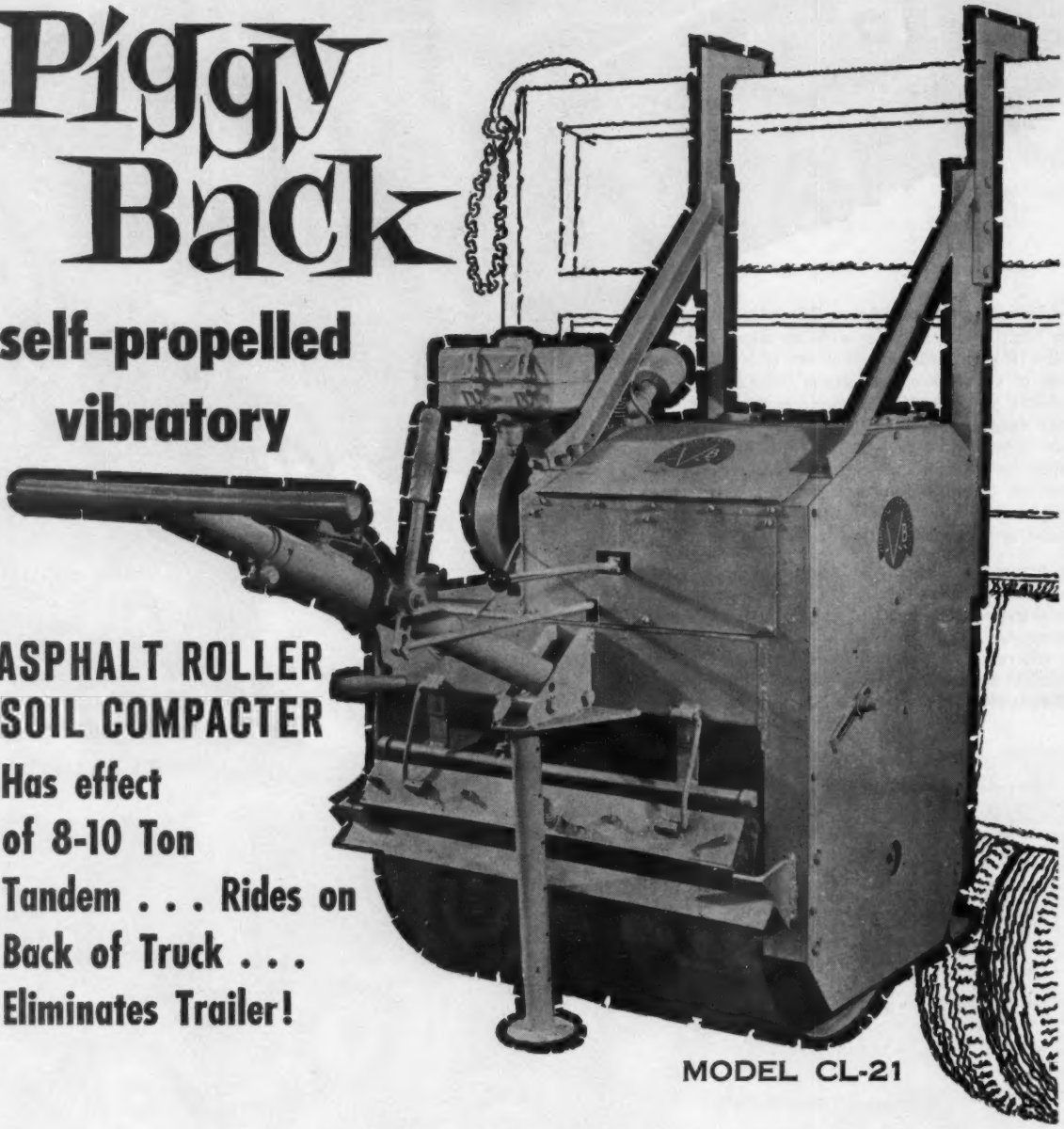
You expect more from STANDARD and you get it!

Eight years on the job for each of these men—Bob Friman, Red Napple of Standard and Western's general superintendent, A. "Blackie" Blackwell. More than 90 million cubic yards of earth and shale have been moved under Blackwell's supervision. Red Napple, Standard's staff engineer, has been working with contractors such as Western for 13 years. He has an engineering degree from the University of Missouri and, has completed Standard's Sales Engineering School.

Piggy Back

self-propelled vibratory



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Has effect of 8-10 Ton Tandem . . . Rides on Back of Truck . . . Eliminates Trailer!

MODEL CL-21

Meet the newest member of the Terrapac family — the "Piggy Back" CL-21 vibratory workhorse . . . If you're interested in results, not claims, this self-propelled combination asphalt roller-soil compactor can be your most valuable piece of equipment . . . It will consistently achieve high production on asphalt and granular materials . . . Ideal for patch work — rolls flush with curb (frame raised 8" on one side) . . . Never idle — moves from job to job on back of your truck . . . Can be operated by any laborer . . . See this real eye opener — see the "Piggy Back" in action!

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WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

COPTER DROPS HER—Pilot watches signalman as ship lowers 3,400-lb pipe section to ground. Man holding rope attached to end of pipe helps guide it into place beside ditch.

Helicopter Strings Pipeline In Swamp

This contractor found pie in the sky when he tried flying in pipe sections by helicopter instead of hauling them in trucks that chewed up the swampy right-of-way and mired the job in mud.

IN A DEMONSTRATION that conclusively showed how to keep pipelaying crews from being mired in mud, a helicopter recently strung 17 sections of pipe for Transcontinental Gas Co. along a swampy stretch of right-of-way near Kaplan, La.

The experiment proved the feasibility of using copters instead of wagons or trucks to bring in pipe sections. Unlike earthbound units, they do not chew up soft ground and leave behind a mess for the gang that cleans, coats, and wraps the pipe. And costs were amazingly low. The contractor, Service Pipe Line Stringing Co. of Monroe, La., pulled off the stunt at an estimated cost of only $.35 per ft of pipe. The comparable figure using wagons to deliver the pipe sections would probably range from $.75 to $1.00.

Lifts Heavy Loads

A Sikorsky S-58 helicopter, the model called the "flying crane" because it is especially designed to tote heavy loads on construction projects, was brought in from Petroleum Helicopters of Lafayette, La., to handle the hefting of the 3,382-lb pipe sections. Capacity of the versatile craft is about 4,000 lb.

With its 53-ft rotor humming a steady tune of power, the whirlybird lifted a pipe section from truck or stockpile at the pick-up spot about ⅜ mi from the pipelaying operation and carried it at a mile-a-minute pace to the waiting crew. Average time for a cycle—delivering one pipe section and coming back to the pick-up spot for another—was about 3 min. The contractor estimates that the maximum feasible distance between pick-up spot and pipelaying crew for such an operation ordinarily would be about 5 mi.

Ground Crew Helps

Guided by a signalman on the ground, the copter pilot lowered the pipe section to the ground about 1 ft away from the ditch already dug to receive it. (The pilot must maneuver the helicopter blind because he cannot see directly below his craft.) Two men with ropes tied to the ends of the pipe section eased it into place alongside the ditch. The ground crew had a rough time bucking the wind from the rotors, which was so powerful that it was hard to stand beneath the whirling blades.

The sling holding the pipe section consisted of two 30-ft-long strands of wire rope attached at the top to a shackle pinned to a bridle beneath the copter. At the end of each wire rope was an ordinary pipe hook that clamped onto the pipe section. A button in the cockpit operated an electric release that disengaged the bridle in case of emergency. By pressing this button the pilot could drop both sling and pipe section.

Service Pipe Line didn't use the copter for anything but delivery of the pipe sections on this trial job, but the handy ships can be used for a variety of hauling chores on most jobs. In the case of a river crossing, for instance, the copter could also place the weights used to hold down the submerged pipe sections. And when working in out-of-the-way places, copters can bring in supplies and construction materials to places that wheeled vehicles cannot reach (*CM&E, May '59, p 134*).

"Best rigs for my money—they're doing an excellent job," says R. E. Robertson, superintendent of excavation for Montag-Halvorson-McLaughline & Associates on the John Day Lock and Dam project near The Dalles, Oregon. He's talking about his seven DW20Gs with Athey PW20 Wagons, carrying 112,000 lb. shot rock or glacial gravel. Five of the DW20Gs stockpiled 100,000 cu. yd. in three weeks. Day after day they make 185 three-mile round trips, pulling big loads at 32 MPH. Says Master Mechanic Huey Long, "These DW20Gs are built to stay on the job."

"These DW20Gs are really hauling sons-o-guns. We've got over 600 hours (in just two months) on them and they're doing great. And this SynchroTouch is undoubtedly the coming thing—only it's here now." This is the way R. A. Heintz describes the five DW20Gs with 482B Scrapers on Heintz & Rogers' railroad relocation project around Ice Harbor Lock and Dam in Walla Walla County, Washington. The tractor-scrapers handle both belt-loading and push-loading tasks. The versatility of these tractor-scrapers has been augmented by sideboarding for easier top loading. Hauling 25 yards of bank run gravel, the DW20Gs move 240 loads every eight hours, cycling in four minutes on the ¾-mile haul.

MORE LOADS MOVED
MORE PROFITS EARNED
WITH CAT DW20s

versatile and dependable

Look at the big jobs—where high, continuous production is a must! John Day Lock and Dam: 3,700,000 yards—Cat DW20G Tractors with Athey PW20 Wagons for prime movers. Railroad relocation for Ice Harbor Lock and Dam: 6,500,000 yards—another Cat DW20G-482B Tractor-Scraper job.

Put this versatile, dependable DW20G on your job and watch its top performance on all conditions, month after month! Its 345 HP (maximum output) Cat Diesel Engine quickly speeds it to top 35.8 MPH, cutting precious seconds from cycle time. Big power takes it up grades fast, keeping production on schedule. With interchangeable 27 cu. yd. (heaped) Cat 456B or 34 cu. yd. (heaped) 482B Scrapers or 40-ton PW20 Wagons (built by Athey Products Corporation), it loads fast—hauls fast—dumps fast. See your Caterpillar Dealer for on-the-job proof of this versatile, dependable DW20G.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

TOUCH AND GO SHIFTING WITH SYNCHROTOUCH Optional Synchro-Touch Transmission Control lets operator dial desired gear, combining split-second shifting with economical direct drive transmission. DW20G with SynchroTouch means faster shifting for faster cycles, more big payloads per hour, and reduced operator fatigue.

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POWERFUL DW20G FOR PROVED PERFORMANCE ON THE BIG JOBS

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first manual impact wrench that works . . .
LOOSENS THE TOUGH NUTS
EVEN POWER WRENCHES CAN'T BUDGE!

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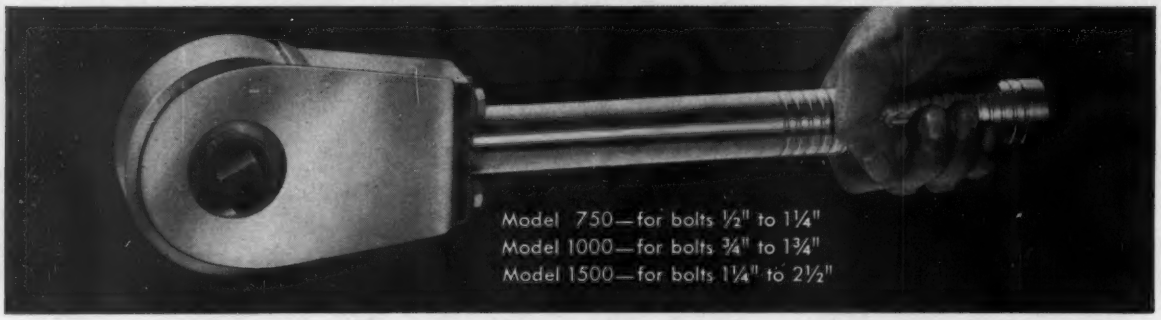


• Loosens "frozen" nuts in seconds • Tightens nuts to maximum practical tightness

There's never been anything like Swench before. It is an entirely new concept in wrench design. Swench is the world's *only manual impact wrench.* Here's what Swench means to you . . .

NEW SPEED—Nuts that previously had to be burned off can now be "Swenched off"—with unbelievable ease—by *one* man—in a matter of minutes.

NEW EASE—Only Swench in its torque class is truly portable . . . lets you take the wrench to the job—*anywhere*—with no auxiliary equipment, no power connections.

NEW SAFETY—With Swench there's no back-breaking, knuckle-knocking struggle . . . no dangerous handle extensions . . . no sudden release of a frozen nut . . . no shock transmitted through the handle.

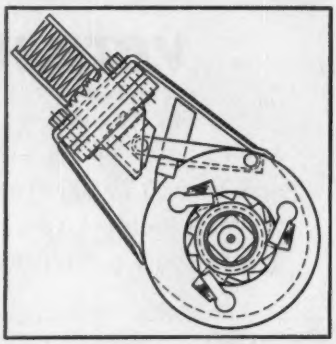
See for yourself! Swench is so different from anything you've experienced, you'll have to see it in action to believe it. For a quick and convincing demonstration, contact Marquette.

NEW POWER—Swench, size for size, gives greater—and more effective—torque than power wrenches . . . multiplies torque applied to handle over 1500% (yet all Swench's power is built into the wrench itself).

NEW ECONOMY—Swench saves in *many* ways . . . no auxiliary equipment to maintain and man, no costly upkeep on the wrench, no man-hours fighting frozen nuts—*and* Swench costs less than half as much as wrenches with comparable impact power.

NEW VERSATILITY—*One* Swench can handle more bolt sizes than any power wrench . . . loosening or tightening requires no special adjustments.

NEW TENSIONING ACCURACY—Precise tightening is assured with Swench, following simple instructions.



INSIDE STORY—How is all this possible? Unlike power wrenches that deliver many tap-like blows, or ordinary manual wrenches that apply steady torque, Swench builds up power in its super-strong spring for a mighty wallop that is released as torsional impact every time the handle is advanced slightly more than 30 degrees.

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Don't wrench it . . . SWENCH it!"

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Contractor Races Against Time and Tide On Bridge Job

PIER WORK—Crews spot 60-ft-long H piles inside a completed cofferdam. Pile driver is mounted on a barge visible at lower right.

BRACING SYSTEM—Only the top rectangular steel ring of the bracing cage is above water level. The cage is hung on spud piles. Sheet piles go in around cage.

Clamming out pier areas in a river bed before erecting cofferdams can be a risky business. To keep silt from washing back in, this contractor expedites cofferdam construction with his own system of preassembled rings that brace the sheet piling.

CONSTRUCTION CREWS hope to complete the substructure for a new bridge across the Potomac River by the end of this year, six months ahead of schedule. If they succeed, they can credit two things: the placid nature of the river and preassembled steel rings that brace the sheet piling for the cofferdams.

These two factors go hand in glove for Diamond Construction Co. of Savannah, Ga., contractors for the $2.3-million job. They are clamming out pier areas in the river bed before erecting the cofferdams, hoping that the river silt won't fill in the excavations. Then they set cofferdam sheeting in a hurry.

Pressure for the completion of the new bridge has been great. It will replace a 55-year-old through-truss structure to the north that is wide enough for only three lanes of traffic and is blamed for some of Washington's monumental traffic jams.

The new bridge, a continuous welded steel structure, will be 2,265 ft long from abutment to abutment. Its substructure includes 14 piers. All but two pier shafts, measured at the footings, are 68½ ft wide and 12 ft thick. To widen the bridge for parkway approcahes on the Virginia side, two western piers are larger. Pier 14 will be 80x20; pier 13, 75x16.

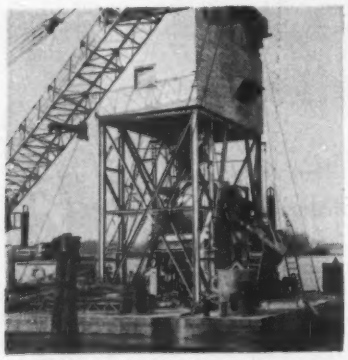
The narrowness of these piers presents Diamond with their primary problem. Trying to excavate inside the cofferdams through the bracing would be a ticklish and time-consuming job. So they are clamming out pier areas in the open river to the required depth of 47 ft below water. This requires removing some 20 ft of muck. They cut back the muck on as steep a slope as they safely can and hope that the river won't fill in the excavation for a day or so. The next step—next day if possible—is the placing of Diamond's own system of cofferdam ring supports.

Diamond expedites cofferdam erection by preassembling on shore the steel cages that brace the sheet piling both before and after the cofferdam is dewatered. When a pier excavation is completed, a cage is barged to the site and set in place by one of three 60-ton floating cranes on the job.

Each cage consists of three levels of rectangular steel rings hung on 80-ft-long 14-in. WF spud piles that weigh 73 lb a ft. Two cross members divide each ring into three sections. The top ring, which stands about 8 ft clear of the water when the assembly

SUBMARINING—As hammer goes under, workman checks depth with a tape. Angle irons near his foot serve as templets for piles.

DEWATERING—Jaeger pump dewaters the cofferdam after the piles are in place and a 10-ft-thick tremie seal has been poured.



BATCH PLANT—Floating setup will supply 18,000 cu yd of concrete for the job.

FORMWORK — Granite facing blocks barged to the site serve as formwork. Rebars are visible as concreting approaches water level and pier starts to take shape.

CONTRACTOR RACES AGAINST TIME . . . *continued*

is in place, is made of 12-in. 53-lb WF beams. The next two rings are 14 and 28 ft below the top ring. The middle ring is made of 21WF112 beams and the lower of 24WF160 beams. The spud piles pass through frames inside the three rings. All connections are welded.

When the cage is in place, 80-ft-long ZP32 Bethlehem steel sheet piles are driven to a firm bearing around the cage. To date, this pre-excavating procedure has proved successful; no extra clamming has been necessary after the cofferdams are in place.

Once the cofferdams are erected, Diamond begins driving 12-in. 73-lb H piles for the piers. All except the two largest piers are supported by three rows of piles spaced at 3-ft centers down each row. The middle row is driven plumb and the outside rows are driven at a 1:12 batter. The two larger piers require four rows of piles, two rows plumb on the inside and two rows on a batter.

The contractor is taking a calculated risk by driving the plumb piles in 60-ft lengths. Borings indicate that a firm bearing exists 85 ft below water, or 38 ft below the bottom of the pier excavation. This leaves the tops of the piles projecting 22 ft above the excavation. If the plumb piles project any farther than this, their tops will interfere with the batter piles and an underwater cutoff will be required. If Diamond fails to find a firm bearing for any particular pile at a depth of 85 ft, then they can drive another 10 ft, but no deeper because at least 12 ft of pile must extend above the bottom of the excavation. If they still fail to find a firm bearing at 95-ft depth, then an underwater splice must be made to extend the pile length. So far the gamble has paid off; all piles have reached a firm bearing within the calculated limits.

Pile driving is handled with a McKiernan-Terry 11B3 hammer that rides a 14-in. WF spud lead and follows the pile top under the water. A 1-in. air inlet hose attachment adapts the hammer to underwater driving by supplying 60 cu ft of air per min to the bottom cylinder. Submarining the hammer results in nearly no loss of efficiency; it just muffles the noise to the satisfaction of residents of nearby suburban communities.

continued on page 113

EATON 2-SPEED TANDEMS

give you all the advantages of BOTH

EATON 2-SPEED AXLES

- ★ *Double* the conventional number of available gear ratios
- ★ Power when you need it; speed when you want it
- ★ Engine operation within the most efficient, economical speed range
- ★ Low stress and wear on axle, clutch, transmission, and drive line
- ★ Simple, low-cost maintenance
- ★ Long truck life; thousands of extra low-cost miles

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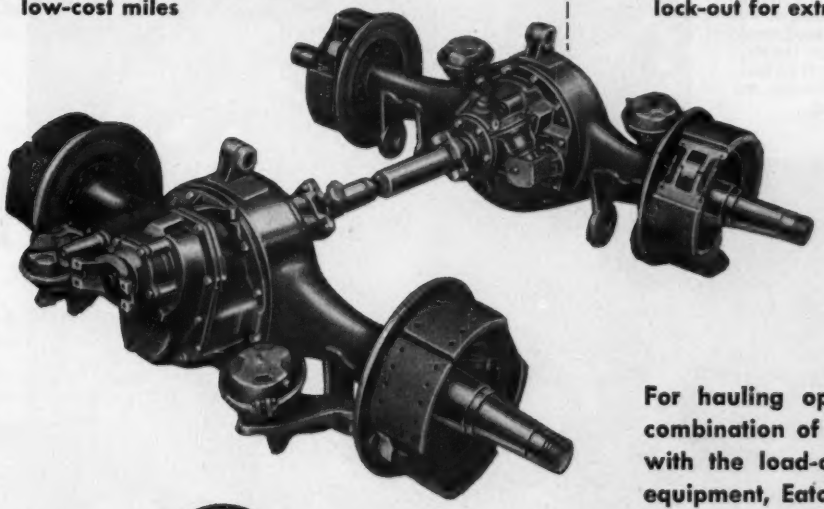
EATON TANDEM DRIVES

- ★ Short over-all length; maximum strength with minimum weight
- ★ Simplified design; few parts; easy, low-cost maintenance
- ☆ Most parts interchangeable with standard Eaton 2-Speed Axles
- ★ No need to match tires; Eaton's inter-axle differential eliminates wheel-fight
- ☆ Power equally transmitted to both axles
- ★ Driver-controlled inter-axle differential lock-out for extra traction when needed



Wide range of capacities. Eaton Tandems are also available in Single and Double Reduction types.

For hauling operations which require a combination of speed and power together with the load-carrying ability of tandem equipment, Eaton 2-Speed Tandems make big savings in hauling costs. Ask your truck dealer to tell you about the many exclusive profit-building features you get only in Eaton 2-Speed Tandems.

EATON

AXLE DIVISION

MANUFACTURING COMPANY

CLEVELAND 10, OHIO

"'K&M' ASBESTOS-CEMENT

LAYS AS FAST AS

Assembling 16" "K&M" Asbestos-Cement Pressure Pipe by hand without the aid of a bar. The backhoe merely steadies and aligns the pipe. The easy, two-step operation consists of (1) lubricating the tapered end of the pipe, and (2) sliding pipe into coupling.

PRESSURE PIPE

A SHOVEL DIGS..."

G&B Construction, Inc., Youngstown, Ohio, installs 4½ miles of "K&M" Asbestos-Cement Pressure Pipe for the Austintown District of Mahoning County, Ohio

"You can lay 'K&M' Pipe as fast as a shovel can dig. There is nothing that will hold you back with this pipe. When you can lay a 16" water line, and it goes in as easy as an 8" water line, what more could you ask? They've got a good joint with that FLUID-TITE® Coupling . . . the pipe is wonderful to put together. There is no comparison between the FLUID-TITE Coupling and other couplings. Of all the 'K&M' Pipe we've laid, we never had a coupling break. Coupling breaks are very common with other pipe."

Those are the comments of Louis Gulfo, partner with Mike and James Bertilacci in G&B Construction, Inc. They installed "K&M" Asbestos-Cement Pressure Pipe in bitter cold, during February and March 1960. However, neither rain, snow, nor mud interrupts the installation of this modern pipe. The exclusive, patented "K&M" FLUID-TITE Coupling and the simple fitting procedures required make assembly easy.

Little or no maintenance will face Mahoning County, which built and will operate the system for a year, or the City of Youngstown, Ohio, which will then take it over. Being non-metallic, "K&M" Asbestos-Cement Pressure Pipe won't rot, corrode, or tuberculate, and is immune to electrolysis. The suppliers of this pipe were Trumbull Plumbing Supply Co., Warren and Youngstown, Ohio.

Now, in addition, you may use quality "K&M" Plastic Pressure Pipe in the same system with "K&M" Asbestos-Cement Pipe, if desired.

Write today for more information on "K&M" Asbestos-Cement Pressure Pipe to: Keasbey & Mattison Company, Ambler, Penna. Dept. P-1480.

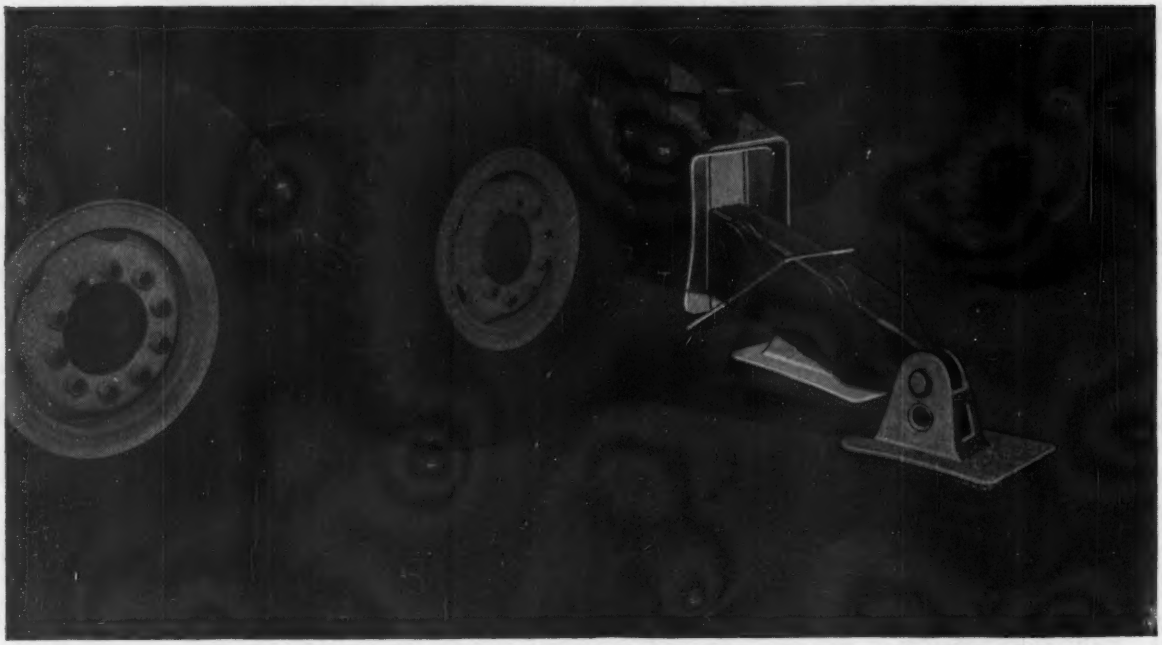
K·M BEST IN ASBESTOS

Keasbey & Mattison at Ambler

Left to right: Louis Gulfo, G&B Construction, Inc.; Dale MacCleary, sales manager, Trumbull Plumbing Supply Co.; James Bertilacci, G&B Construction, Inc., Burke Lyden, Asst. Chief Engineer, Youngstown, Water Dept., Jim Bisciglia, Asst. Engineer, Mahoning County, and J. Henry Painter, Trumbull Supply Company.

3 miles of 16" "K&M" Asbestos-Cement Pressure Pipe were installed. Here, we see it ready for installation along Webb Road, in Austintown Township. In branching from the 16" water line, Mahoning County used 1 mile of 12" "K&M" Asbestos-Cement Pressure Pipe and ½ mile of 8" "K&M" Asbestos-Cement Pressure Pipe. Specifications call for 90 lbs. pressure when line is in operation serving 16,000 residents.

POWER-SET OUTRIGGERS



World's fastest outriggers set in about a minute

You can move more, lift more, earn more with "Power-Set"® Outriggers on Lorain Moto-Cranes. Just move in and let four hydraulically-powered curved beams take over. Rough terrain's no problem. Each beam is independently controlled and pivoted floats adjust to uneven or sloping ground. You get quick positive leveling the easy way. Wedge locks take over automatically for positive security.

Fast move-ups. Move around a lot on the job? Then "Power-Set" Outriggers will save you hours! In just 20 seconds all four outriggers retract to an eight-inch clearance for on-the-job moves. Another 20 seconds and they're reset, ready to go. They are so fast you no longer have to sacrifice maximum capacities to get rubber-tire mobility.

Contractors going places choose Lorain. For Lorain delivers the pace-setting features that build profits. "Power-Set" Outriggers . . . the 10-year warranted "Shear-Ball"® turntable connection . . . Square-Tubular-Chord booms—these are some of the design innovations that will pay off for you when you go Lorain. See your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Campanella & Cardi Construction Co. of Warwick, R.I., finds that fast-acting "Power-Set" Outriggers on its 35-ton Moto-Crane speed operations. Equipped with a 70-ft. boom, this Lorain works on grading, drainage and bridge construction on Interstate Route 95 near Attleboro, Mass.

LORAIN® ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

CONTRACTOR RACES AGAINST TIME . . .

continued from page 108

During most of the driving, two 2-in. angle irons serve as templets for the piles. The angles, placed by instrument observation from shore stations, are bolted to 12-in. beams that extend lengthwise across the top ring of the cofferdam cage. These beams also serve as a working platform. Beams and angles are removed when the hammer approaches them. As the pile goes under the water, its depth is measured with a steel tape fastened to the top of the hammer and payed out by a workman.

After all the piles are driven, Diamond places a 10-ft-thick tremie concrete seal, leaving a maximum of 12 ft of pile projecting through. Then they dewater the cofferdam with 5-in. Jaeger pumps, and make pile cutoffs in the dry, 2 ft above the top of the tremie seal.

Concreting begins once the cofferdam is dry. Granite facing blocks are placed as part of the formwork. Diamond has its own floating batch plant on the job serviced by a 25-ton steam crane. This plant supplies the 18,000 cu yd of concrete (including 6,000 yd for the tremie seal alone) required for the project. The plant has a two-compartment 250-ton Blaw-Knox bin and two 2-yd Koehring mixers.

Diamond builds all of its own floating equipment, including three floating cranes—oil-fired steam rigs mounting booms up to 136½ ft long. They brought in a 600-hp diesel tug and nine barges. Most of the equipment came up from Savannah headquarters, some from another project Diamond has been building across Washington channel less than ¼ mi away.

In design, the new bridge will be the twin of another 10-year-old bridge to the south, except that it will have a draw span. It will carry five lanes of traffic between 14th St. in Washington and the Shirley Highway on the Virginia side of the Potomac.

The bridge is being built for the District of Columbia Department of Highways and Traffic. Carl Wilson is bridge construction superintendent and Daniel O'Donald is resident engineer. W. L. Rose is project superintendent and Howard Rivenburg is project engineer for Diamond.

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2-inch Holes Through Concrete 41 Inches Thick!

Twenty-seven 2-inch holes through reinforced concrete *18-41 inches thick*—that was the job to be done on a bridge project. Using one Longyear diamond drill, a contractor completed the work in a few days at low cost despite the fact that *the bit was cutting steel 10% of the time.* The job was finished on schedule with Longyear diamond drilling equipment. *What other type of drilling equipment could have done this work at justifiable cost?* Call your Longyear dealer to find out about the great advantages and applications of Longyear diamond bits and the all-new industrial drills.

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Fast, accurate swings to work areas, often more than 170 feet away, were possible with exclusive Magnetorque drive.

"LONG REACH MAKES THE DIFFERENCE... IT'S THE KEY TO EFFICIENT OPERATION"

. . . J. L. SIMMONS COMPANY INC., CONTRACTORS—NORTH SIDE SEWAGE TREATMENT WORKS OF GREATER CHICAGO

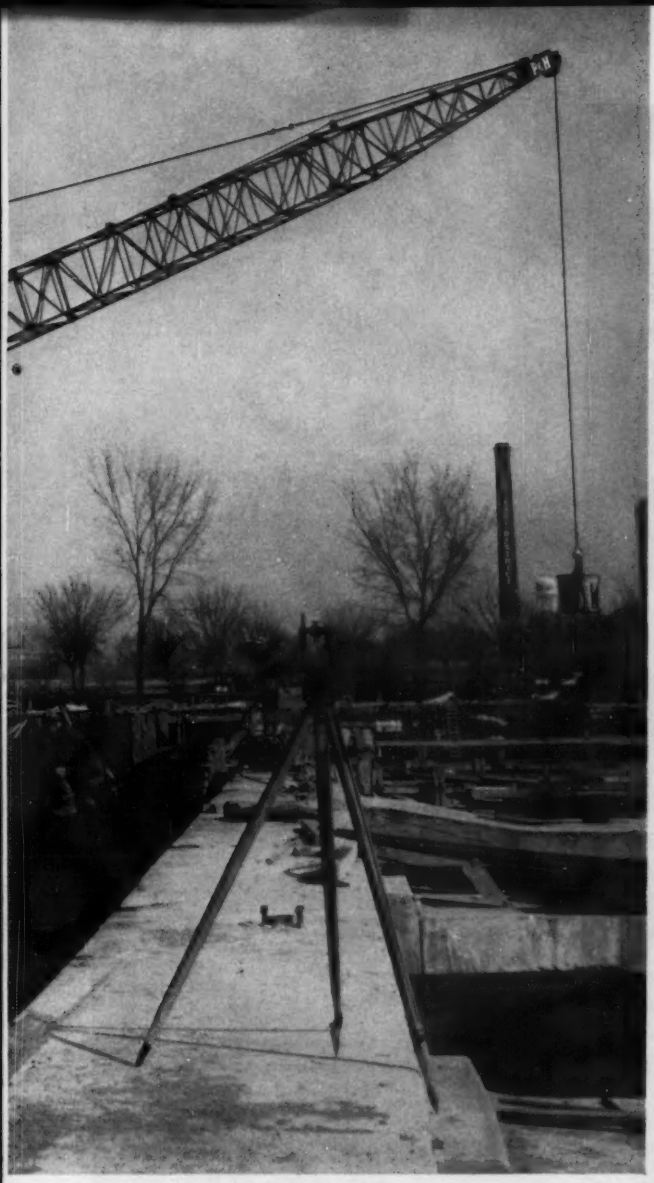
One of the nation's oldest contractors reports on their 110-ton P&H Crawler Crane operation.

Here's what F. A. Miller, Construction Manager has to say . . . *"Without a doubt, our 110-ton P&H Crane has been the key to this operation. Its lived up to our every expectation. For example—we've poured concrete over 170 feet away with a 200 foot boom and a 1-yard bucket . . . over 150 feet away with a 2-yard bucket. Its got the fastest, controlled swings of any crane I've seen. We're ahead of schedule and our work is proceeding smoothly, efficiently as planned . . . thanks to our P&H."*

Long Reach—the ability to handle up to 300 feet of boom permitted J. L. Simmons Company to work from the perimeter of the job and spot light loads anywhere . . . resulted in faster, more economical construction, more efficient operation.

Big Capacity—with a rating of 110 tons, the P&H had more than enough capacity to handle the big work loads of concrete and equipment at those far-out reaches . . . enabled Simmons to maintain top production and uninterrupted work flow.

Fast, Effortless Swings—with exclusive Magnetorque® drive. The big crane gave Simmons more work loads per hour and smoother, more accurate



Long reach of the 110-ton P&H permitted efficient work procedure. Here the crane loads concrete bucket from mixer truck on job perimeter before delivery to work area.

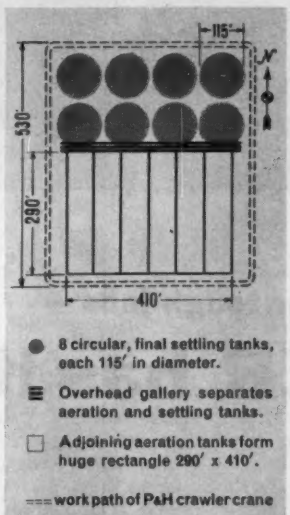
Precise spotting of work loads was a cinch due to P&H planetary boom hoist, unmatched stability and positive-action hydraulic controls.

starting and stopping . . . Highly important in this operation where long, safe swings were a necessity.

Accurate Spotting of Loads—precise accuracy in spotting loads at far-out reaches was a problem on this job—and was solved through Independent Planetary Boom Hoist, which permitted power lowering of the boom, together with the simple Hydraulic Control System—where the slightest lever or pedal movement produced immediate response—resulted in smoother work cycles with no lost time jockeying for position.

Unmatched Stability—the ability to handle up to 300 feet of boom and the rated loads with utmost accuracy and safety were the result of P&H balanced design, even weight distribution and the extra wide 16′ 10″ crawler assembly. It was this built-in stability that permitted those long reaches with full capacity loads.

For the full detailed report on this unusual job story, write for Case History Report No. 102.


115′
530′
290′
410′
N
8 circular, final settling tanks, each 115′ in diameter.
Overhead gallery separates aeration and settling tanks.
Adjoining aeration tanks form huge rectangle 290′ x 410′.
work path of P&H crawler crane

Overall job layout and type of unit construction indicates importance of perimeter work operation.

HARNISCHFEGER

Milwaukee 46, Wisconsin

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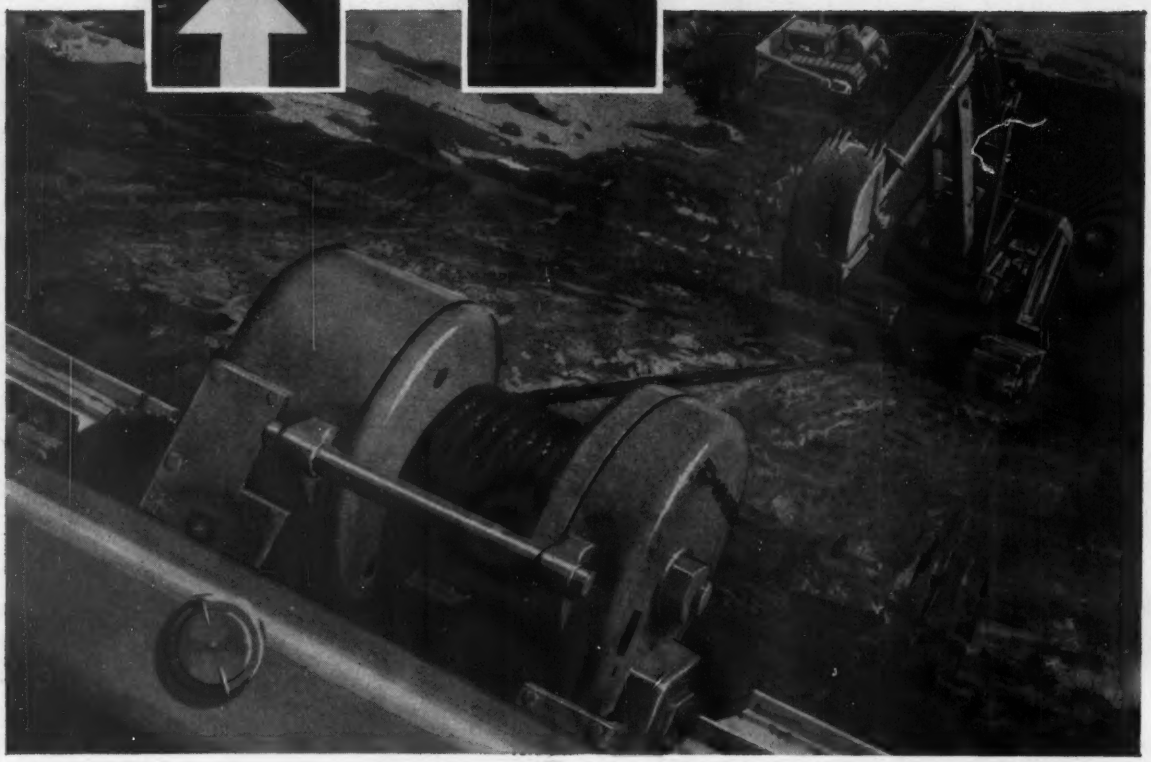

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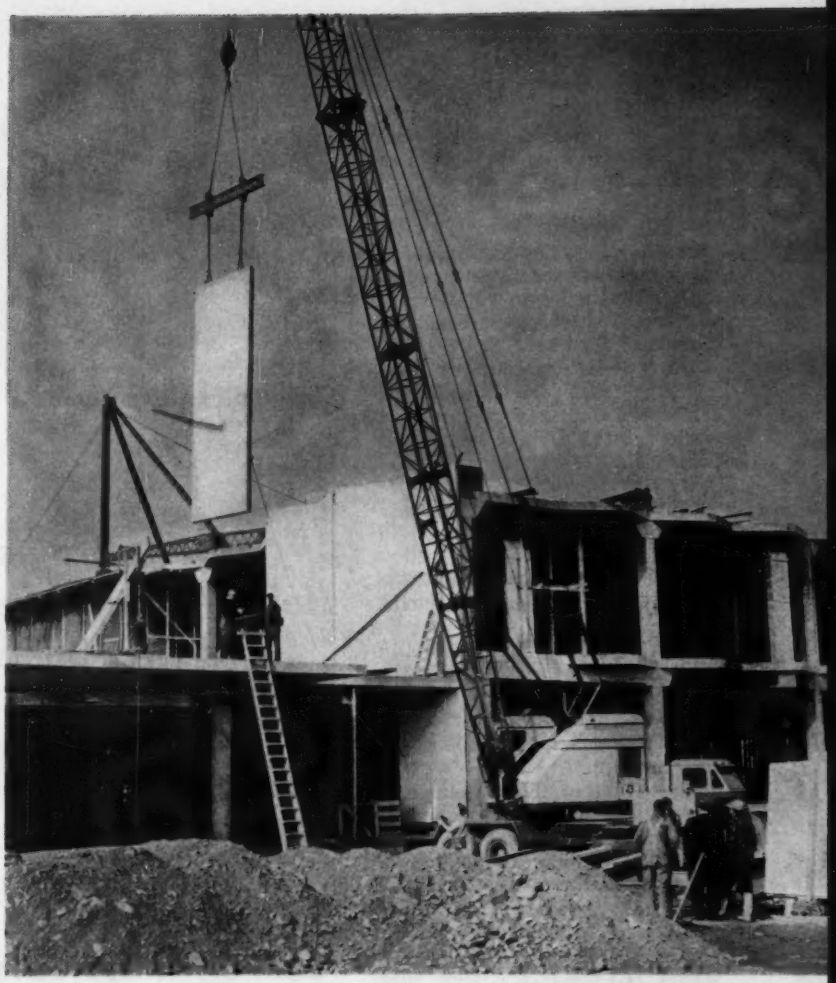


Erecting 5-ton precast architectural building panels for a New England department store called for considerable know-how on the part of the rigging contractor. On one second-story wall, a truck crane put up the ones it could reach (right), then fed the remaining ones to a derrick on the roof.

Heavy Precast Panels Require Double Handling

LARGE PRECAST building wall panels often can produce unusual and pleasing architectural effects in the finished building. At the same time they can pose some equally unusual but not so pleasing erection problems for the contractor who has to put them in place.

The new Sears Roebuck department store in Saugus, Mass., is a good example. Its walls consist of 252 large, white, Mo-Sai panels set in pairs to form a series of V-shaped corrugations. Erecting them required the skill of one of New England's most experienced rigging contractors, the Owen J. McGarrahan Co. of Cambridge.

Erection was difficult for several reasons. One was the size of the panels. A typical panel is 8-ft wide, 19-ft high, 5-in. thick, and it weighs 5-tons. They probably are the largest factory-precast panels that have been erected in New England.

The panels had to be erected by lifting them into place with hooks at the top. But a panel could not be lifted in this way from a horizontal position on the ground because it was not strong enough to act as an unsupported beam. So McGarrahan had to devise a special lifting frame to allow a crane to pick up the panels.

The biggest problem was one second-story wall that was difficult to reach. For most of its area the building is two stories high. But there is a 100-ft-wide one-story extension along one 230-ft side of the main building. The second floor wall that extends along the roof of the first story is inaccessible from the ground except at the ends. McGarrahan rigged a derrick on the roof and a rail-mounted cart to handle the panels for this wall.

One over-riding problem was a tight construction schedule. The general contractor for the superstructure, Vappi & Co., got the award only last November. Sears wanted to occupy the building in July. So Vappi poured concrete all winter to get the structural

frame ready for the panels. Then McGarrahan had to maintain the pace by putting up the panels as quickly as possible.

Special Panels

Besides their unusually large size, the panels are distinctive because of their design. They were fabricated to close tolerances by Cambridge Cement Stone Co., one of the Mo-Sai Associates, in their Allston, Mass., plant. Cambridge cast white quartz aggregate in a white cement so that the quartz forms 80% of the exposed surface.

They used a stiff concrete mix that developed a 28-day strength of 7,500 psi. To obtain extra-dense concrete, they vibrated the wooden forms during the pour. Temperature and curing conditions were carefully controlled in the indoor plant. To increase the insulating properties of the panels, Cambridge cast a 1½-in. layer of Styrofoam in the middle of each panel.

The edges of the panels were carefully shaped and finished so the panels would meet at the proper angle in the building and form a smooth joint. In the field, the joint was sealed with a rubber gasket and Thiokol calking. The gasket was ¾ in. wide when inserted, but the panels were then pulled together with come-alongs to compress the gasket to a ⅜-in. thickness.

Lifting Frame

The panels traveled to the site on trucks and were unloaded into horizontal piles on the ground. The P&H truck crane that lifted them into place in the building went through two steps to get hold of the panels by the lifting hooks cast into the top of each.

First, it picked up a panel by two hooks cast into the side. The panel was strong enough to be lifted up from a flat position by the side hooks but not by the top hooks. The crane laid the panel down on a special tilt-up frame that McGarrahan built.

The frame consisted of three braced parallel 10H33 beams with an 8-in. angle welded across the bottom. The panels were cushioned by 2x8-in. timbers laid along the steel H-beams.

When the panel was on the

Crane picks up a panel . . .

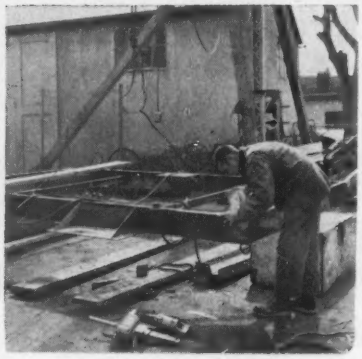
by hook on the side . . .

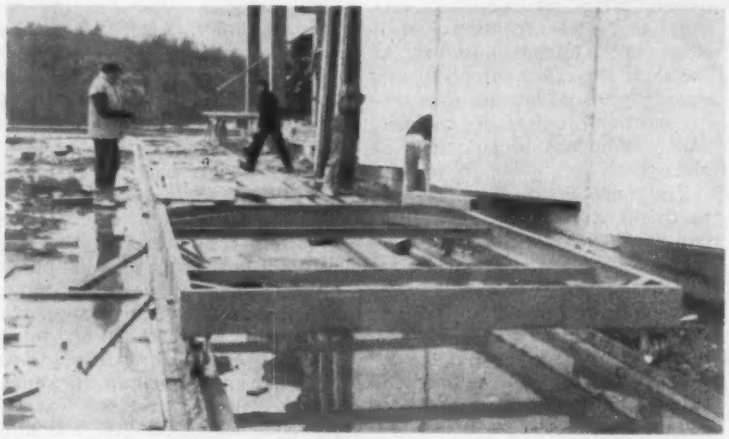
Tilt-up Frame Helps Truck Crane Lift Panels

until it is nearly upright . . .

Cart on Rails Hauls Panels on Roof

SETTING UP THE CART—Workman puts wheels on cart (right). The V-grooved wheels ride on steel angles (below) to reduce friction to a minimum. Putting the angle tracks in inverted Vee position makes for better distribution of the wheel load.

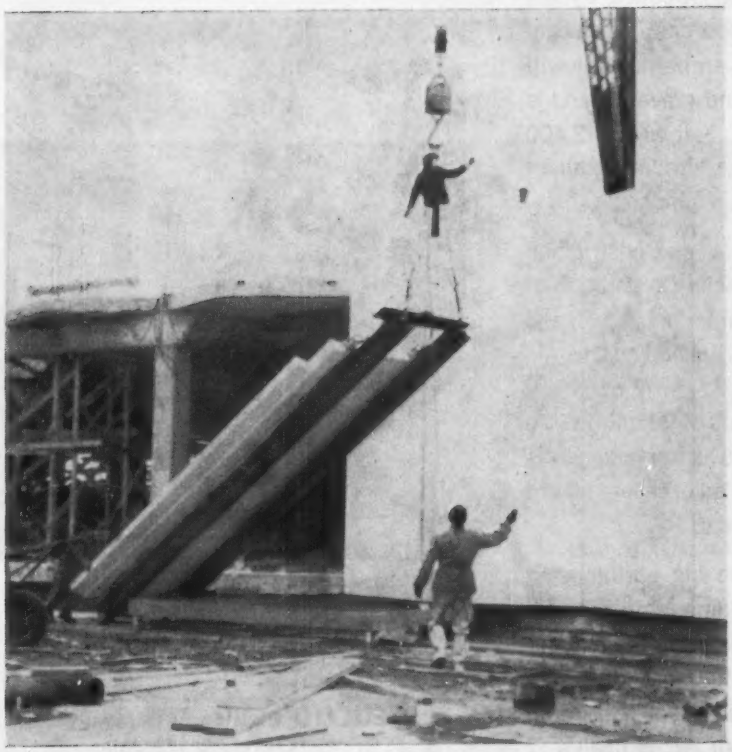




puts it on a steel frame . . .

lifts one end of frame . . .

then swings panel free . . . and places it on building



USING THE CART—Stiffleg derrick on the roof of the second story picks panel off cart with lift frame similar to the one used by the truck crane working on the ground.

frame, the crane released its hold on the side hooks and regrasped the panel at the top hooks. At the same time, a second lift line from the crane was attached to lifting hooks on the frame.

The crane then lifted the end of the frame carrying the panel. When the frame had almost reached a vertical position, the crane took up on the line attached to the panel and gradually lifted it free of the frame. Then it lowered the frame to the ground and placed the panel in the required position on the building.

Second Story Work

The 38 panels located on the second-story wall overlooking the one-story extension required the most handling. The truck crane on the ground was able to set the first four unassisted. For the rest, McGarrahan set up a special system.

They mounted a stiffleg derrick on the roof of the second story. The derrick was rated at 4 tons capacity and tested to 8 tons. It had a 7,000-lb line pull with a three-part line. The derrick was the smallest available that would handle the loads safely. Even so, it weighed 8 tons with its engine and had to be mounted carefully so as not to overload the roof. McGarrahan set the mast over one of the main building columns. They also reinforced the roof slabs under the sills with 4x6-in. temporary timber shoring and anchored the foot blocks with cables extending through the roof.

The derrick could set about eight panels from one position. It had to move four times to set the panels across the 230-ft width of the building. To move it, crews jacked it up on timbers and skidded it along to the next position.

To get the panels to the derrick, from the edge of the roof where the truck crane brought them, McGarrahan built a special cart. It consisted of four 2x8-in. channels welded together into a rectangular frame and braced at the corners. It mounted four V-grooved wheels made by the Timken Roller Bearing Co. The cart was pushed by hand along a track consisting of two 3x3x⅜-in. angles set to form inverted Vee's on planks along the roof.

For McGarrahan, Ed Donovan was in charge of operations. Frank Mastropieri was superintendent for Vappi.

28 "EUCS"

BUILDING 11 MILLION YD. EARTH-FILL DAM

30 YD. BOTTOM-DUMPS ON LONG, HIGH SPEED GRAVEL HAUL...REAR DUMPS HANDLE BIG ROCK LOADS

Hills Creek Dam in western Oregon is part of the Willamette Valley Project under construction by the Corps of Engineers to provide flood control, navigation, power and irrigation. The embankment will require 11 million yards of earth and gravel fill and is scheduled for completion in 1961... it will be 2,400 feet in length and will have a maximum width of 1,600 feet at the base and 24 feet at the crest.

Green-Tecon, a joint venture of Green Construction Co., Des Moines, Iowa, and the Tecon Corporation of Dallas, Texas, have the earthmoving contract. These contractors are using a fleet of 28 Euclids on this big job . . . 13 Bottom-Dumps of 30 yd. and 7 of 17 yd. struck capacities and 8 Rear-Dumps of 22 and 27-ton capacities. The big "Eucs" work two ten-hour shifts six days a week... have marked up an excellent record of productive capacity and job availability.

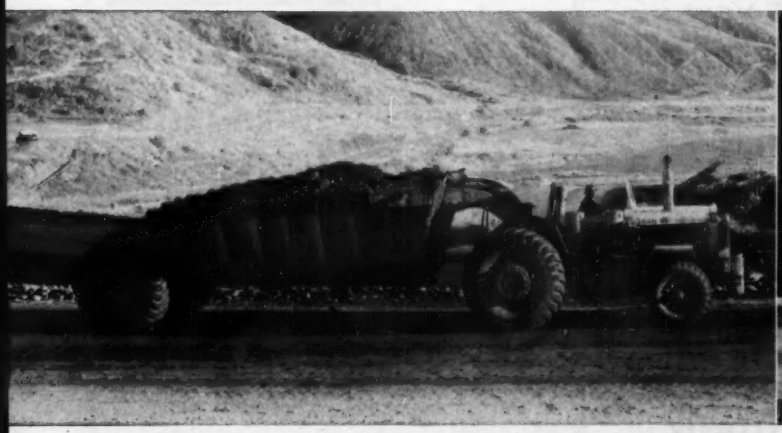
Whether your operations involve big earthmoving projects like this one or small grading, stripping and industrial work, there's a Euclid model to match your requirements. Get all the facts and figures on the modern Euclid line of crawler tractors, scrapers, rear-dump and bottom-dump haulers from your Euclid dealer.

Six 27-ton and two 22-ton Rear-Dump "Eucs" haul rock from the quarry to the fill... all of these units are equipped with Torqmatic Drives and Torqmatic Brakes.

EUCLID Division of General Motors
Cleveland 17, Ohio

EUCLID (GREAT BRITAIN) LTD.
Lanarkshire, Scotland

A 7½ yd. dragline loads a Model LDT Bottom-Dump Euclid with 40 yds. of river gravel for 2½ mile haul to the fill. Green-Tecon have 13 of these big "Eucs" that are powered by 12 cylinder GM diesel engines of 432 h.p. with Torqmatic Drive.



Big loads of heavy gravel move over good haul roads at fast travel speed in these Bottom-Dump "Eucs". Torqmatic Drive — torque converter and semi-automatic transmission — provides full-power shift and a smooth flow of power to meet all road and grade conditions on the 5 mile cycle.

Well-maintained haul roads enable the Rear-Dumps to utilize their fast travel speeds on the 4500 ft. rock haul. On downgrades that are a maximum of 15% Torqmatic Brakes provide positive control of speed.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

SUPERIOR

The dependable source for ALL concrete forming accessories

Here are representative types of form ties, anchors, inserts, hangers, as well as several new items in Superior's most complete line of concrete accessories. Illustrated is the variety of concrete form work and related jobs in which Superior accessories are used. *All* Superior accessories are designed to provide the most dependable and efficient forming methods.

WHENEVER YOU ARE PLANNING FORM WORK . . . Superior's technical assistance is available to prepare layouts. Call nearest office shown below.

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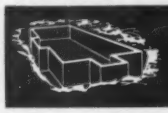
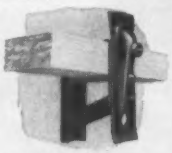


Ordinary Foundations

SNAP TIES

NEW



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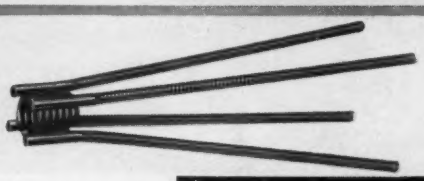
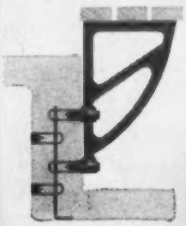
Overpasses and Underpasses



4-STRUT COIL ROD ANCHORS

Form Anchorage



RISERFRAMES

Stadiums and Grandstands

PICK-UP INSERTS

Tilt-Up and Precast Work

OFF THE TRUCK—Operator walks Allis-Chalmers HD-6 tractor down shop-built beaver tail at end of Ford flatbed truck that carried rig to job.

MAKING BUCKS—Dozer goes right to work grading a housing development in Columbus, Ohio, headquarters of George Igel's custom excavation firm.

Rigs Ride Trucks, Radio Keeps 'Em in Touch

One of the biggest custom excavators in the country makes his equipment mobile by providing each rig with a radio-equipped truck that it rides from job to job. Each operator doubles as a truck driver, and also plays an important role in the maintenance program.

RIDING PIGGYBACK on trucks that carry them from job to job, the earthmoving fleet of George J. Igel & Co., Inc., of Columbus, Ohio, is one of the most mobile in the country.

A contractor who specializes in custom excavation, Igel provides a flatbed or trailer truck to haul each of his rigs. The truck driver doubles as the equipment operator. A two-way radio hookup connects each unit in the field with a team of dispatchers in the main office that controls the operation. One unit may hit as many as five jobs in one day, with no delays caused by returning to headquarters in between.

Most of Igel's work consists of jobs like basement excavation, digging sewer-line trenches and swimming pools, and other light grading such as landscaping. About 60% of their work consists of custom jobs. Bid-contract work, involving jobs with as much as 100,000 yd of excavation, makes up the rest. Although they limit their operations primarily to within a 25-mi radius of their home base, they are the largest contractor handling this type of work in the state of Ohio, and they rank among the biggest custom excavators in the country.

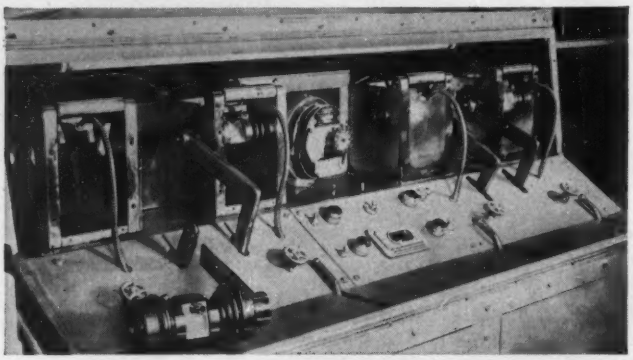
Their equipment fleet is big, varied, and above all, mobile. They own some 30-odd tractor units, each with its companion truck to haul it from job to job. The breakdown includes five Caterpillar D6's, a D7, and 15 Allis-Chalmers HD-5's and 6's among the dozers, and three Michigan loaders, an Allis-Chalmers HD-11G, two HD-6G's and four HD-5G's among the tractor shovels. There are 20 flatbed trucks fitted with a shop-built beaver-tail that simplifies loading of the dozers. Nine tractor-trailers carry the larger tractor shovels.

Besides the tractors, Igel's equipment sheet lists three graders (two Galion and one Allis-Chalmers), five Caterpillar tractor-drawn pans, two LeTourneau - Westinghouse Model D scrapers, and two Allis-Chalmers 160 scrapers. These rigs ordinarily handle the bigger jobs.

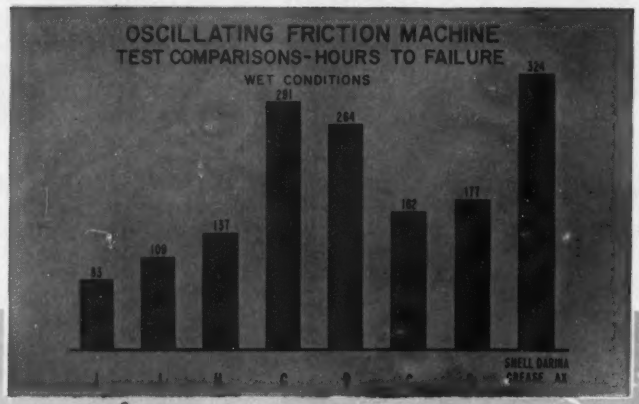
In addition, Igel owns 19 crawler cranes and 13 truck cranes. Makes include Lorain, Bucyrus-Erie, Bay City, and Lima. They rent these out with operators to various jobs in the vicinity. (Renting-out cranes since 1924, Igel makes a big share of their money in this business.) Several low-boys take care of transporting the crawler-mounted rigs.

continued on page 126

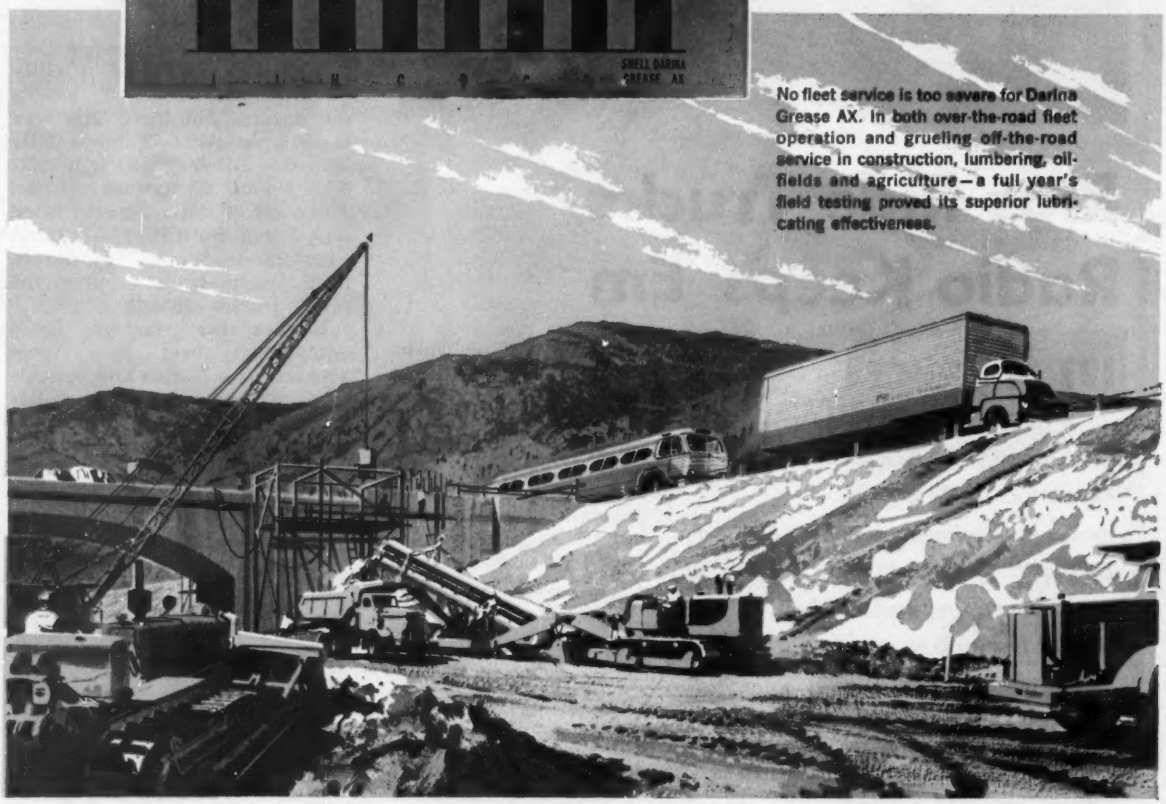
NEW heavy-duty sets



The Shell Oscillating Friction Machine that proves the superior effectiveness of Shell Darina Grease AX under both wet and dry conditions is shown.



No widely used grease—not even the best premium, multi-purpose greases—can compare to the "hours to failure" record set by Darina Grease AX. Chart shows results of the more severe "wet" condition test.



No fleet service is too severe for Darina Grease AX. In both over-the-road fleet operation and grueling off-the-road service in construction, lumbering, oil-fields and agriculture—a full year's field testing proved its superior lubricating effectiveness.

automotive grease endurance test record

New findings about Shell Darina Grease AX change maintenance practice for heavy-duty fleets

The toughest job for automotive greases is in shackle-type bearings where the movement is confined to short arcs of 15 degrees or less. Until now, however, most machines that evaluated greases used *rotating* bearings.

The Shell OFM Test (Oscillating Friction Machine Test) equipment, shown on left, duplicates severe *oscillating* service conditions. Bar chart shows how one grease — Darina® Grease AX—outlasts other greases.

Shell Darina Grease AX is a new development that is based on a waterproof MICROGEL* component. Contains *no soap!* Developed by Shell Research to give these qualities:

WASHOUT RESISTANCE. In ASTM water washout test, loss of Darina Grease AX was only one percent compared to washout rates as high as 12% for conventional multi-purpose greases.

WATER ABSORPTION. Tests prove that even water saturation cannot destroy the lubricating efficiency nor metal adhesion properties of Darina Grease AX.

MECHANICAL STABILITY. Darina Grease AX won't liquefy and run out. Its stability is unexcelled by any other type multi-purpose lubricant.

Road Service Confirms Tests

Results are in from sixteen major operators of heavy-duty equipment covering 30 million miles and a wide range of service. Report after report shows how Darina Grease AX extends wheel bearing and chassis lube mileage.

Over 1000 automotive units were used. The results in all cases showed that Darina Grease AX provided superior lubrication for wheel bearings, shackles, kingpins, steering linkages, and other chassis parts.

Shell Darina Grease AX is specially formulated to lubricate heavy-duty equipment that operates under adverse conditions of terrain and climate.

No matter what type of heavy-duty fleet vehicles you operate, you will want the full story on Shell Darina Grease AX. Write or phone today.

*Trademark

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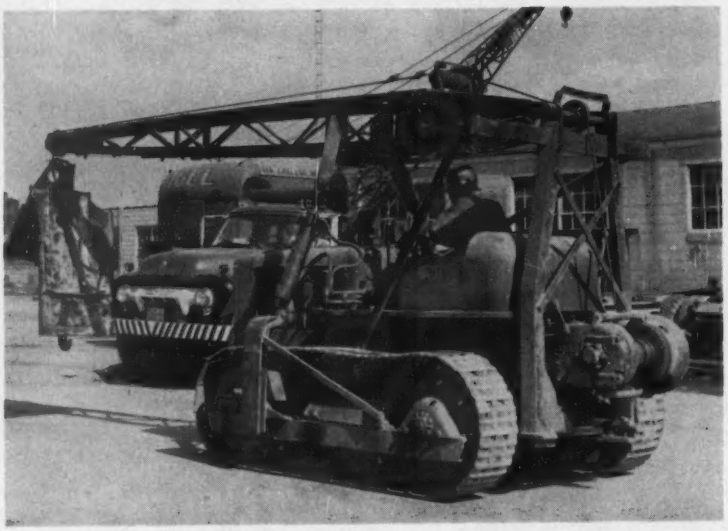
SHELL

RADIO LINKS TRUCK—Operator in field calls office for news of next job.

WITH HEADQUARTERS—Four-man dispatching team in main office routes rigs by radio from job to job, keeping track of about 65 jobs in an average day.



HOME-MADE SHOP CRANE—Converted Allis-Chalmers HD-5 with 15-ft hydraulically operated boom with 3000-lb capacity comes in handy for moving heavy assemblies in yard.

The key to controlling this sprawling operation is in the hands of a four-man dispatching crew operating a Motorola two-way radio hookup that ties the scattered units together. Seated on both sides of a four-desk work counter in the main office, the crew directs the driver-operators from one job to another, handling any problems that crop up to interrupt the smooth functioning of the team.

The four-man crew handles dispatching of about 65 jobs in an average day. It's often hectic, but emergencies are so common that the hardened crew takes them in stride. It's not at all unusual during the height of the summer rush season for all four men to be frantically busy answering calls one right after another with hardly a breathing spell in between.

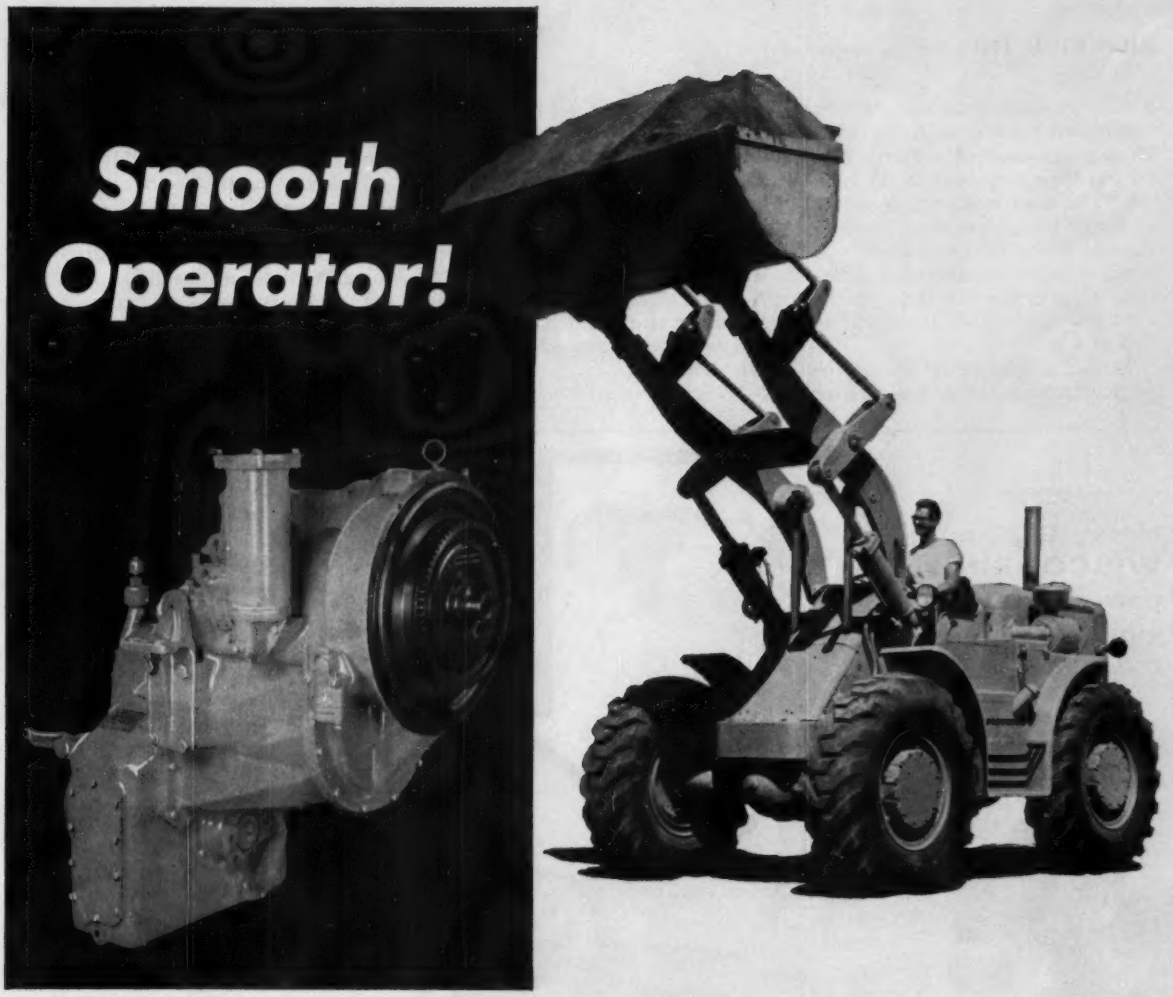
Two of the men handle dispatching of the earthmoving units, the other two split the job of handling the cranes. One of them also takes care of renting haul trucks for any excavation job that requires them. And the veteran of the team has the responsibility of clearing, with City Hall, all work that might affect municipal property.

Four Supers Check Jobs

Mounted on top of each dispatch desk is a map showing all streets and roads in the Columbus area. Igel divides the area into four sections, each a quadrant of a circle with its center at the heart of the city. A roving superintendent in a pickup checks on work progress and serves as a general trouble-shooter in each section. Rigs seldom move from one section to another once they leave the yard in the morning. It saves time to route them to another job in the same area. The dispatcher usually outlines the best route for the operator to take when changing jobs.

Besides the two-way radio system with its handy phone-type receivers (there are five radio phones for incoming calls), Igel has two private telephone lines for calls going out to suppliers. The men take advantage of an automatic dialing mechanism to get one of some 50-odd frequently-called numbers.

continued on page 128



Cat's new wheel Traxcavator features fast-working power-shift transmission with Twin Disc Torque Converter

Time was when wheel-type loaders were viewed with scorn as little more than overgrown agricultural machines. But in the years since World War II, the wheel loader has gained universal favor with construction men. Its speed and mobility have proved to be real production-boosting advantages in many types of loading jobs.

Now, after years of research and engineering plus more than 14,000 machine test hours, the 944 Traxcavator — first wheel loader to bear the famous Caterpillar trademark — has made its appearance.

There's no need to enumerate the 944's many design and performance features. These have been given wide coverage in all the construction magazines. It is worth pointing out, however, that the new wheel loader, like so many other Cat machines, is equipped with a Twin Disc Torque Converter.

The torque converter — a single-stage Type 6 model — works in conjunction with the 944's two-speed forward, two-speed reverse, planetary transmission. Each of these four in-line gear trains has its own clutch. Two of the planetary trains are for direction control while the other two provide gear speed selection. Reverse speeds are 25% faster than forward—a key factor in reducing cycle time. The torque converter assures smooth, instantaneous clutch engagement by absorbing the shock of the shift in its fluid circuit.

It takes an actual demonstration to fully appreciate the smooth, effortless response of this power train. Your Caterpillar Dealer will be glad to show you what the Cat 944 Traxcavator can do.

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin. Hydraulic Division: Rockford, Illinois.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC
Torque Converters

A time-card puncher within convenient reach of each man provides the means of keeping tabs on the time required to do each job. The men make up cards for each of their operators' assignments. When an operator calls in to report a job completed, the dispatcher punches the time on the card and sends it off to the billing department.

Igel is a firm believer in preventive maintenance. The master mechanic in charge of the maintenance program is Sam Adams, who has been with Igel for some 30 years. He directs two welders and a crew of 10 mechanics and helpers. Four service pickups make the mechanics as mobile as the units they work on in the field. A score of other pickups handle servicing and fueling of the rigs. They carry converted oil drums that hold fuel.

When an operator has trouble with his machine on the job, he simply calls in to his dispatcher and asks for help, telling him what's the matter and what parts will be needed, if any. (The shop carries a full stock of parts, and Adams makes sure they are replenished as necessary.) Right away Adams sends one of his crews of troubleshooters to the spot. They handle all but major repairs in the field, bringing a rig into the shop only when compelled to by a breakdown.

Operators Pamper Rigs

The operators take a healthy interest in the fitness of their rigs. Each man is assigned a particular machine, and if it's laid up for repairs in the shop it means he will miss a day or more of work. So he makes sure that his rig will be in shape by informing Adams or one of the mechanics whenever anything appears to be going on the blink. They try to take care of this kind of preventive maintenance after the day's work or on rainy days.

The aim of the maintenance crew is to fight downtime. They hate to keep a rig in the shop when it could be out on a job. That's why they do so much work on the spot. "You never can tell how things will go from one day to another," says Adams. "Some days we won't get any calls for help, while on other days we may get 15 or 20. The important thing is to be ready to handle the trouble fast when it comes, and get that rig back to work."

Igel can't spare even one rig for long; demand for his crews is high. Some of his operators have made such outstanding reputations for themselves that there are waiting lists of customers who want a particular man for their jobs. The piggyback system of sending truck-tractor combinations out on each job pays off by stretching the usefullness of Igel's fleet to its limit.

A Civic-Minded Contractor

A son who is carrying on his father's old trucking firm in a highly progressive manner, George J. Igel, Sr. is president of the company. He is very active in civic affairs, and is so highly esteemed as a businessman that he was honored as Columbus' Man of the Year not long ago.

Here's rugged power for your toughest jobs!

The one-cylinder Wisconsin Engines powering the Vibra-Tow rollers are small — but they are long on service. And that's what makes heavy-duty construction equipment pay off.

The Model AENLD engines are designed to give the most service with the least care. They are precision-fitted for smooth-firing power and minimum wear. And they have the ruggedness to absorb the grueling punishment of day-in, day-out compacting roller service.

Look at these heavy-duty long-life features: Each Wisconsin has tapered roller bearings on both ends of the crankshaft; four piston rings; pump-circulated lubrication; and an outside weather-sealed high-tension magneto for fast starts. Stellite-faced exhaust valves and inserts and positive rotators extend valve life up to 500%.

It pays to specify Wisconsin Engines on the equipment you buy. Sizes from 3 to 56 hp — with electric starting available for all models. Send for Bulletin S-249. Write to Dept. C-30.

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MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

The right design, the right steel, the right shape make *ESCO* Two Piece Teeth right for every digging condition.

The earth moving industry looks to

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See reverse for shapes and size range

Here are the points to remember...

Each easy-to-change ESCO Point is Brinell tested to assure exactly the right degree of shock-absorbing toughness and abrasion-resisting hardness for longer life. Abrasion resistant Wear Caps (illustrated) extend adapter life.

12M ALLOY STEEL

ESCO 12M Two Piece Teeth are the toughest you can use. Developed through years of research for the earth moving industry, cast *ESCO* 12M is the finest steel made for severe shock and abrasion.

ESCO TWO PIECE TEETH
for all your digging equipment

Your *ESCO* dealer can supply two piece teeth for all your equipment. Consult him about standardizing on *ESCO* teeth for the added advantages of quantity purchasing and reduction of on-the-job inventories.

WEAR CAP ADAPTERS

The ESCO Wear Cap Adapter, winner of the Blue Ribbon Mining Award, is the most rugged tooth assembly ever developed for handling tough rock and taconite. Replaceable wear caps sharply increase service life by protecting the adapter from wear. No special pins or welding required.

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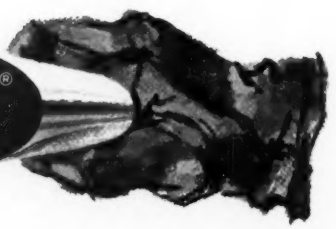

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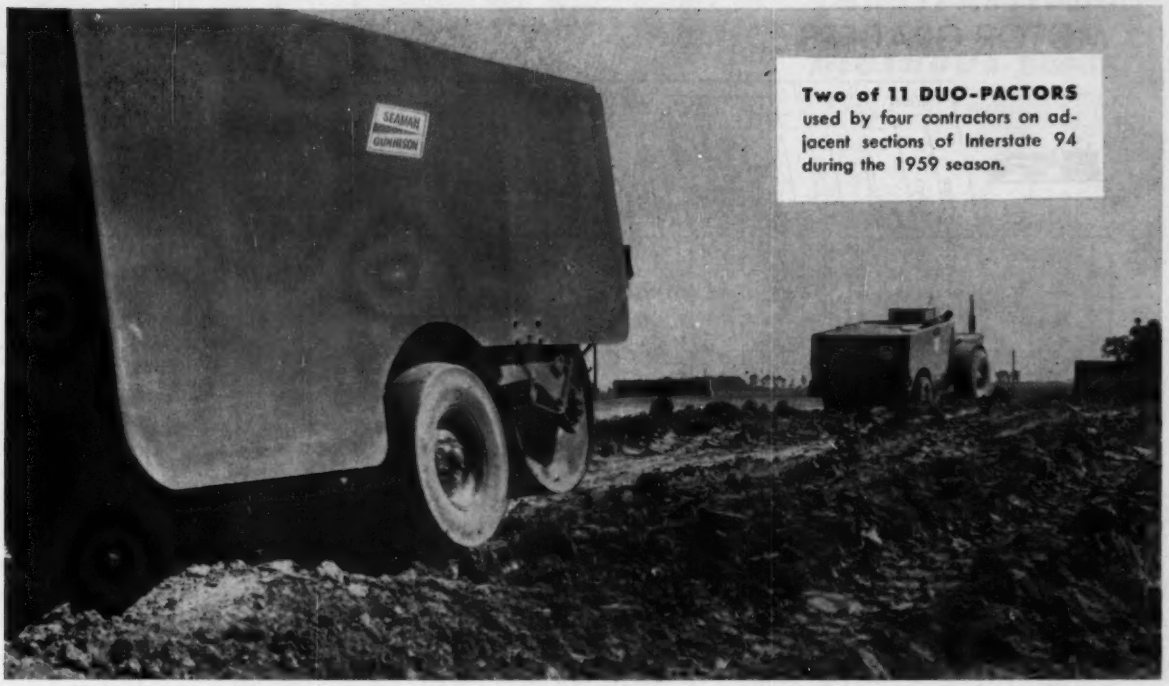


Two of 11 DUO-PACTORS used by four contractors on adjacent sections of Interstate 94 during the 1959 season.

Is compaction wiping out your profit margins?

...then consider these DUO-PACTION facts!

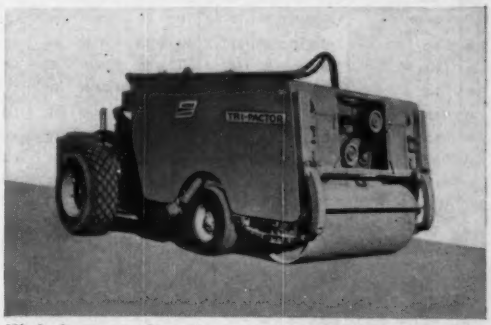
With the key role compaction now plays in the construction of interstate, state, and county highways, compaction costs can make the difference between profit and loss on a contract. Adoption of end-result specifications places a premium on the use of more efficient compaction equipment.

DUO-PACTION was developed to meet today's realistic compaction specifications. Scores of contractors have now proved that DUO-PACTION, compared with former compaction methods, can meet the most rigid density specifications, *and* at the same time:

- **Reduce compaction time by as much as 75 per cent**
- **Reduce horsepower requirements by one-half to one-third. That's because:**

Only DUO-PACTION combines pneumatic and steel rolling in a single machine that is equally efficient in keeping pace with high-speed scrapers on earth fill, compacting granular base, or finish rolling. Only the DUO-PACTOR provides pneumatic tires so closely spaced that material displacement on low-bearing subgrades is minimized, permitting higher surface loadings to develop specified densities with fewer passes. And only DUO-PACTOR provides steel rolling at the touch on a lever, to choke in the ridged material not compacted by the tires, thus *unifying density across the entire rolling width.*

Only the DUO-PACTOR spreads your investment over so many jobs. From fill compaction to seal coating, you can handle more jobs with a DUO-PACTOR *than with any other compaction equipment ever available.* That means lower unit costs, bigger profit margins . . . phone or write for on-the-job proof!



High impact vibration can be added to the DUO-PACTOR'S steel roll, providing TRI-PACTION—pneumatic, steel, and vibratory compaction all with one machine!

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	MAKE AND MODEL	WEIGHT			HP		DIMENSIONS, IN.						TRAVEL SPEEDS										ENGINE					
		Front Wheels	Rear Wheels	Total	Rating	Torque Converter	Length	Width	Height with Cab	Height less Cab	Wheel Base	Tread, Front	Tread, Rear	1st	2nd	3rd	4th	5th	6th	7th	8th	Reverse, Low	Reverse, High	Make	Model	Gas or Diesel	Cycle	No. of Cylinders, Bore & Stroke	Rated H.P.	Starting Method
1	ALLIS-CHALMERS D	2,700	6,300	9,000	58		220	73	106	74	168	60	66 1/2	2.7	4.8	11.8	25.2	–	–	–	–	3.3	–	ALLIS-CHALMERS	226	G	4	(4) 4x4 1/2	1,650	ELECTRIC
2	DD	2,700	6,590	9,350	58		224	73	106	74	168	60	66 1/2	2.7	4.8	11.8	25.2	–	–	–	–	3.3	–		262	D	4	(4) 3 9/16x4 3/8	1,650	
3	145	6,500	15,040	21,540	80		304	92	126	93	225	79 1/2	78 1/2	2.7	4.0	6.0	8.4	12.2	20.3	–	–	3.2	7		145	D	4	(4) 4 7/16x5 9/16	1,800	
4	45	6,425	17,375	23,800	127		309	92	126	109	225	79 1/2	78 1/2	2.7	4	5.8	8.7	12.9	20.6	–	–	3.2	7		45	D	4	(6) 4 7/16x5 9/16	1,600	
5	AUSTIN-WESTERN Pacer 100	7,187	9,078	16,185	106		286	93	118	102	228	79	79	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(2) 4 1/4 x5	2,100	ELECTRIC
6	Pacer 100	2,134	9,266	16,400	106	✓	286	93	118	102	228	79	79	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(2) 4 1/4 x5	2,100	
7	Super 100	7,115	11,527	18,642	106		303	96	118	102	229	84	84	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(3) 4 1/4 x5	2,100	
8	Super 100	7,142	11,715	18,857	106	✓	303	96	118	102	228	84	84	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(3) 4 1/4 x5	2,100	
9	Pacer 200	8,733	11,330	20,063	106		288	93	118	102	228	79	79	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(3) 4 1/4 x5	2,100	
10	Pacer 200	8,769	11,510	20,278	106	✓	288	93	118	102	228	79	79	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(3) 4 1/4 x5	2,100	
11	Super 200	7,595	12,495	20,094	106		303	96	118	102	228	84	84	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(3) 4 1/4 x5	2,100	
12	Super 200	7,626	12,683	20,309	106	✓	303	96	118	102	228	84	84	2.53	4.11	6.01	8.77	14.22	20.79	–	–	2.58	8.92	GM	3-71	D	2	(3) 4 1/4 x5	2,100	
13	Pacer 300	8,687	12,263	20,950	118		297	95	118	104	236	79	79	1.98	3.21	4.69	6.84	11.10	17.82	–	–	2.01	6.96	GM	4-71	D	2	(4) 4 1/4 x5	1,900	
14	Pacer 300	8,712	12,453	21,165	122	✓	297	95	122	104	236	79	79	1.98	3.21	4.69	6.84	11.10	17.82	–	–	2.01	6.96	GM	4-71	D	2	(4) 4 1/4 x5	2,000	
15	Super 300	8,747	14,103	22,850	118		315	96	124	104	236	82	82 3/8	1.98	3.21	4.69	6.84	11.10	17.82	–	–	2.01	6.96	GM	4-71	D	2	(4) 4 1/4 x5	1,900	
16	Super 300	8,772	14,293	23,065	122	✓	315	96	124	104	236	82	82 3/8	1.98	3.21	4.69	6.84	11.10	17.82	–	–	2.01	6.96	GM	4-71	D	2	(4) 4 1/4 x5	2,000	
17	Pacer 400	11,050	14,070	25,120	143		298½	95	124	104	236	79	79	2.20	3.59	5.20	7.59	12.40	19.09	–	–	2.23	8.20	GM (a)	4-71	D	2	(4) 4 1/4 x5	2,000	
18	Pacer 400	11,129	14,421	25,550	143	✓	298½	95	124	104	236	79	79	2.20	3.59	5.20	7.59	12.40	19.09	–	–	2.23	8.20	GM (a)	4-71	D	2	(4) 4 1/4 x5	2,000	
19	Super 400	10,980	16,730	27,690	143		317	96	124	104	236	82	82 3/8	2.20	3.59	5.20	7.59	12.40	19.09	–	–	2.23	8.20	GM (a)	4-71	D	2	(4) 4 1/4 x5	2,000	
20	Super 400	11,059	17,061	28,120	143	✓	317	96	124	104	236	82	82 3/8	2.20	3.59	5.20	7.59	12.40	19.09	–	–	2.23	8.20	GM (a)	4-71	D	2	(4) 4 1/4 x5	2,000	
21	Super 500	10,980	16,810	27,790	165		317	96	124	104	236	82	82 3/8	2.31	3.77	5.46	7.96	13.02	20.0	–	–	2.34	8.61	GM	GV-71	D	2	(6) 4 1/4 x5	2,100	
22	Super 500	11,969	17,161	29,220	165	✓	317	96	124	104	236	82	82 3/8	2.31	3.77	5.46	7.96	13.02	20.0	–	–	2.34	8.61	GM	GV-71	D	2	(6) 4 1/4 x5	2,100	
23	CATERPILLAR 112E	6,030	14,775	20,805	85		299	93	123	88	225	80	79	2.4	3.2	9.3	5.9	12.5	17.1	–	–	3.2	4.3	CAT	D330	D	4	(6) 4 1/2 x5 1/2	2,000	ELEC. OR GAS
24	112F	6,030	14,915	20,945	100		299	93	123	88	225	80	79	2.5	3.4	4.5	6.2	13.1	18.0	–	–	3.3	4.5		D330	D	4	(6) 4 1/2 x5 1/2	2,100	
25	12	6,860	18,935	25,795	115		308¾	91¾	125	90½	230	77 3/8	79 1/4	2.4	3.7	5.7	8.6	12.8	19.9	–	–	4.1	6.3		D333	D	4	(6) 4 1/2 x5 1/2	1,800	
26	14	7,010	21,510	28,520	150		316	96	127	92	260	80 5/8	80 7/8	2.6	4.0	6.2	9.5	14.0	21.6	–	–	4.5	7.0		D333	D	4	(6) 4 1/2 x5 1/2	1,800	
27	GALION 503	2,700	6,300	9,000	58		237	74	104	74	170	65	65	2.3	4.5	8.2	20.4	–	–	–	–	4.3	–	IHC	UB 220	G	4	(6) 3 9/16 x 3 15/16	1,800	Direct Elec.
28	303	4,410	10,590	15,000	70		280	86	116	85	206	–	74	2.6	3.6	4.2	5.6	6.3	8.8	12	17	3.4	4.6	IHC	UD-282	D	4	(5) 3 11/16x4.390	1,800	
29	450	6,200	14,800	21,065	85		305	94	126	92	227	80	80	2	3.3	5.2	7.1	11.8	20.1	–	–	2.4	8.4	IHC	UD-370	D	4	(6) 4 5/8 x 5 1/2	1,800	ELECTRIC
30	104	6,740	15,810	22,550	100		305	94	126	92	227	80	80	2	3.3	5.2	7.1	11.8	20.1	–	–	2.4	8.4	IHC	UD-14A	D	4	(4) 4 3/4 x 6 1/2	1,800	
31	118	6,910	16,600	23,510	125		308	95	127	93	227	80	80	2.5	4.2	6.4	8.8	14.8	22.6	–	–	2.9	10.5	IHC	UD-554	D	4	(6) 4 5/8 x 5 1/2	1,800	
32	160	8,320	20,200	28,520	160		320	95	127	93	235	80	80	2.5	4.2	6.4	8.8	14.8	22.6	–	–	2.9	10.5	Cummins	H-6BI	D	4	(6) 4 7/8 x 6	1,800	
33	T500	7,315	16,325	23,635	125	✓	310	95	127	93	231	80	80	.8-3.6	2-7	3.5-12	5.5-22	–	–	Same as Forward				Cummins	JN6-BI	D	4	(8) 4 1/8 x 5	2,500	Direct Elec.
34	T600	8,320	20,200	28,520	160	✓	320	95	127	93	235	80	80	.8-3.6	2-7	3.5-12	5.5-22	–	–	Same as Forward				Cummins	JN5G-B1	D	4	(6) 4 1/8 x 5	2,500	Elec.
35	T700	12,550	27,300	39,850	220	✓	338	102	133	112	254	82	86	.9-4.8	1.8-9.5	3.4-20	–	–	–	Same as Forward				Cummins	NH220BI	D	4	(6) 5 1/8 x 6	2,100	Direct Elec.
36	HUBER-WARCO M-52	2,120	4,130	6,250	45.5	✓	163	86	100	73	114	60 1/2	60	2.6	4.6	8	16.	20.7	–	–	–	4.2	–	Cont.	F-162	G	4	(4) 3 7/16 x4 3/8	2,100	ELECTRIC
37	50-190	9,580	20,440	30,000	195	✓	347	101	131	112	258	89	84	4.5	8.5	20	–	–	–	–	–	5.6	–	GM	6-71	D	2	(6) 4 1/2 x 5	1,800	
38	6-D	7,750	16,370	24,120	102	✓	316	95	128	109	236	80	81	3.3	6.5	10.5	20.8	–	–	Same as Forward				GM	3-71	D	2	(3) 4 1/2 x 5	2,100	
39	6-DD	7,820	16,980	24,800	125	✓	318	95	128	109	236	80	81	3.5	7.1	11.5	23	–	–	Same as Forward				Cummins	JN6BI	D	4	(6) 4 1/8 x 5	2,500	
40	7-D	8,600	18,400	27,000	140	✓	318	96	129	110	236	80	81	3.3	6.5	10.5	20.8	–	–	Same as Forward				GM	4-71	D	2	(4) 4½ x 5	2,100	
41	8-D	6,580	15,190	21,770	85		314	95	128	109	234	80	81	2.29	3.67	5.93	8.04	12.87	20.81	–	–	2.41	21.93	IHC	UD-370	D	4	(4) 4 5/8 x 5 1/2	1,800	
42	8-D	6,600	15,900	22,100	100		314	95	128	109	234	80	81	2.29	3.67	5.93	8.04	12.87	20.81	–	–	2.41	21.93	GM (a)	3-71	D	2	(3) 4 1/4 x 5	2,000	
43	10-D	7,400	16,150	23,550	125		314	95	128	109	234	80	81	2.29	3.67	5.93	8.04	12.87	20.81	–	–	2.41	21.93	GM (a)	4-71	D	2	(4) 4 1/4 x 5	1,800	
44	11-D	7,850	19,170	27,020	160		316	98	128	110	234	80	81	2.34	3.75	6.06	8.21	13.14	21.24	–	–	2.47	22.40	Cummins	H-6B1	D	4	(4) 4 7/8 x 6	1,800	
45	LeTOURNEAU-WESTINGHOUSE 230	4,210	10,225	14,435	67		273	87	119	86	202	76	77	2.4	3.7	4.6	6.4	18.3	–	–	–	3.2	–	GM	3-53	D	2	(3) 4 1/2 x 4 1/2	1,800	ELECTRIC
46	330	6,625	14,875	21,320	85		301	92	126	92	227	77	78	2.1	2.9	4.2	6	9.2	13	15	23.3	1.7	12.2	(a)	J-6-BI	D	4	(6) 4 1/8 x 5	1,800	
47	440	6,785	16,215	23,000	115		304	93	126	92	227	80	78	2.2	3.2	4.6	6.5	10	14.1	16.1	25.2	1.8	13.2	(b)	D-160-BI	D	4	(4) 4 7/16 x 5	1,800	
48	550	6,725	17,490	24,215	123		305	93	126	92	227	78	79	2.2	3.2	4.6	6.5	10	14.1	16.1	25.2	1.8	13.2	(b)	D-160-BI	D	4	(4) 4 7/16 x 5	1,800	
49	550 (Power Flow)	6,725	17,875	24,600	145	✓	305	93	126	92	227	78	79	3.5	7.3	16.1	26.4	–	–	–	–	3.2	23.5		C-160-BI	D	4	(4) 4 7/16 x 5	2,100	
50	660	7,010	21,115	28,125	160		316	94	128	96	227	79	80	2.3	3.3	4.7	6.7	10.3	14.6	16.7	26	1.9	13.7	(c)	H-6-BI	D	4	(6) 4 7/8 x 6	1,800	
51	660 (Power Flow)	7,010	21,235	28,245	190	✓	316	94	128	96	227	79	80	3.6	7.6	16.7	27.4	–	–	–	–	3.3	24.4		HRF-6-BI	D	4	(6) 5 1/8 x 6	2,000	
52	PETTIBONE MULLIKEN PM-412	10,100	14,300	24,400	145	✓	307	94	125	110	230½	80 1/4	80 1/4	.5-2.5	.7-3.7	1.4-6.7	1.9-9.2	2.8-13.3	5-24	–	–	.4	19.5	GM (f)	4-71	D	2	(4) 4 1/4 x 5	2,100	
53	PM-12	8,400	18,450	26,850	145	✓	316	95	125	110	230½	80 1/4	80 1/4	.5-2.5	.7-3.7	1.4-6.7	1.9-9.2	2.8-13.3	5-24	–	–	.4	19.5	GM (f)	4-71	D	2	(4) 4 1/4 x 5	2,100	
54	PM-612	10,575	18,775	29,350	145	✓	316	95	125	110	230½	80 1/4	80 1/4	.5-2.5	.7-3.7	1.4-6.7	1.9-9.2	2.8-13.3	5-24	–	–	.4	19.5	GM (f)	4-71	D	2	(4) 4 1/2 x 5	2,100	
55	401	5,750	15,540	21,290	69	No	314	96	126	85	234	83	82	2.08	2.85	4.04	5.54	6.66	9.13	13.23	16.13	3.03	4.15	HERC	298	D	4	(4) 4 1/4 x 5	1,800	
56	401A	6,135	15,670	21,805	93	No	314	96	126	85	234	83	82	2.08	2.85	4.04	5.54	6.66	9.13	13.23	16.13	3.03	4.15	GMC	371	D	4	(4) 4 1/4 x 5	1,800	
57	402	6,700	16,340	23,040	125	No	314	96	126	85	234	83	82	2.32	3.17	4.50	6.17	7.42	10.16	14.74	20.18	3.38	4.63	GMC	471	D	4	(4) 4 1/4 x 5	1,800	
58	403	7,350	18,650	26,000	125	No	317	96	126	85	234	83	82	2.02	2.76	3.92	5.37	6.45	8.84	12.82	17.55	2.94	4.02	GMC	471	D	4	(4) 4 1/4 x 5	1,800	
59	404	7,500	19,340	26,840	125	No	319	96	127	86	234	81	81	2.07	2.83	4.02	5.51	6.62	9.07	13.05	18.00	3.01	4.13	GMC	471	D	4	(4) 4 1/4 x 5	1,800	

(a) Available with GMC–71 engine
(b) Available with GM4–71 engine
(c) Available with GM6–71 engine
(d) Includes torque converter and final drive
(e) Available with Cummins C-160 engine
(f) Available with Hercules PH-529 engine
(g) Available with IHC or Cummins engines
(h) Transmission and final drive
(*) Includes clutch

Specs for Your Files...

	Price, FOB Factory, Standard Model	Size, L x W	BLADE: Max. Lift above Ground, In.	Max. Side Shift, In.	No. of Pitch Positions	Max. Blade Cut Angle, Deg.	Max. Shoulder Reach, In.	Type of Lifting Mechanism	Lift Speed, In. Per Sec.	SCARIFIER: Weight, Lb.	No. of Teeth	Space Between Teeth, In.	Max. Pressure, Lbs.	TIRES: Front	Rear	CAPACITIES: Fuel Tank, Gal.	Cooling System, Gal.	Crank Case, Qts.	Transmission, Qts.	MISCELLANEOUS: Controls, Type	Steering, Type	Ground Clearance, In.	Width of Non-Slip Tires, In.	
		10' x 15 1/2"	12	5 3/8	6	–	48 1/2	Hyd.	2.2	350	7	4 1/2	4,900	6.50-16	7.50-20	27	3	7	16	Hyd.	Manual	–	394	1
		10' x 15 1/2"	12	5 3/4	6	–	48 1/2	Hyd.	2.2	350	7	4 1/2	4,900	6.50-16	7.50-20	27	4	5	16	Hyd.	Manual	–	394	2
		12' x 22"	19 5/8	46 1/4	7	90	71 1/2	Mech.	2.12	1,510	11	4 1/2	9,400	9.00-24	13.00-24	63	7 3/4	12	8	Mech.	Manual	12 1/8	478	3
		12' x 22"	19 5/8	46 1/4	7	90	73 1/2	Mech.	2.12	1,575	11	4 1/2	9,200	9.00-24	13.00-24	63	9 1/2	14	8	Mech	Hyd. Booster	12 1/8	488	4
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	9,120	13.00-24	13.00-24	42	7 1/4	15	14			14	384	5
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	9,150	13.00-24	13.00-24	42	7 1/4	15	14			14	384	6
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	9,140	12.00-24	12.00-24	42	7 1/4	15	14			14	386	7
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	9,170	12.00-24	12.00-24	42	7 1/4	15	14			14	386	8
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	9,680	13.00-24	13.00-24	42	7 1/4	15	14			14	384	9
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	9,710	13.00-24	13.00-24	42	7 1/4	15	14			14	384	10
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	10,950	12.00-24	12.00-24	42	7 1/4	15	14			14	384	11
		12' x 22 1/2"	15	82 1/2	7	90	99 1/2		4.8	1,200	11	4 1/2	10,980	12.00-24	12.00-24	42	7 1/4	15	14			14	384	12
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	11,630	14.00-24	14.00-24	53	9	17	14			15	384	13
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	11,600	14.00-24	14.00-24	53	9	17	14			15	384	14
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	11,750	13.00-24	13.00-24	53	9	17	14			15	414	15
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	11,750	13.00-24	13.00-24	53	9	17	14			15	414	16
		13' x 24"	16	97	7	90	126		4.8	1,300	11	4 1/2	14,000	14.00-24	14.00-24	75	9	17	14			14 3/4	384	17
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	14,100	14.00-24	14.00-24	75	9	17	14			14 3/4	384	18
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	13,920	13.00-24	13.00-24	75	9	17	14			13	414	19
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	14,000	13.00-24	13.00-24	75	9	17	14			13	414	20
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	13,920	13.00-24	13.00-24	75	11	24	14			13	414	21
		13' x 24"	16	97	7	90	129		4.8	1,300	11	4 1/2	14,000	13.00-24	13.00-24	75	11	24	14			13	414	22
		12' x 24"	16	36	17	90	77		3.3	1,511	17	4 3/8	9,010	7.50-25	13.00-24	60	9	16	56	Mech.	Manual	18	423	23
		12' x 24"	16	36	17	90	77		3.3	1,511	17	4 3/8	9,010	7.50-25	13.00-24	60	9	16	56	Mech.	Man.	18	423	24
		12' x 24"	15	36	15	90	88		3	1,511	17	4 3/8	9,100	9.00-25	13.00-24	60	11	24	56	Mech	Manual	20	429	25
		12' x 27"	17 1/4	37 1/88 40 3/4L	15	90	88		3 3/4	1,463	11	4 1/2	9,325	14.00-24	14.00-24	68	11	24	56	Power Mech.	Hyd. Booster	22 3/4	432	26
		10' x 16 5/8"	12	6	6	–	–		3	460	7	5	4,100	7.50-20	7.5-20	23	4 1/2	8	16		Manual	21	372	27
		10' x 20"	15 1/2	31	8	90	61		3	750	9	5	5,175	10.00-24	10.00-24	33	5 1/4	9	48		Manual	19	396	28
		12' x 24 1/2"	18 1/2	44	8	90	72		3	1,350	11	4 1/2	7,525	13.00-24	13.00-24	70	13	11	45		Booster	21	480	29
		12' x 24 1/2"	18 1/2	44	8	90	72		3	1,350	11	4 1/2	8,700	13.00-24	13.00-24	70	15	16	45		Booster	21	480	30
		12' x 24 1/2"	19 1/2	44	8	90	72		3	1,350	11	4 1/2	9,575	13.00-24	13.00-24	70	21	20	45		Booster	22	480	31
		12' x 29"	19 1/2	97	8	90	97		3	1,500	11	4 1/2	11,500	14.00-24	14.00-24	70	15	–	45		Booster	22	480	32
		12' x 24 1/2"	19 1/2	97	8	90	97		3	1,350	11	4 1/2	9,790	14.00-24	14.00-24	75	34 3/4	20	34		Booster	22	480	33
		12' x 29"	19 1/2	97	8	90	97		3	1,500	11	4 1/2	11,500	14.00-24	14.00-24	80	11	20	42		Booster	22	480	34
		14' x 30"	19 1/4	100	8	90	100		3	2,130	9	5 5/8	16,900	16.00-24	16.00-24	90	16	29	44		Booster	30	480	35
		9' x 13 1/2"	9	19 1/4	3	–	39		3	275	5	9	2,400	7.50-16	12.00-20	17	3	4	4 1/2		Manual	14	210	36
		13' x 28"	17	L-52	6	90	78		3	1,550	11	4 1/2	13,100	16.00-24	16.00-24	78	9 1/2	26	50			32	540	37
		12' x 24"	16	R-47 L-52 R-47	6	90	72		3	1,400	11	4 1/2	10,240	13.00-24	13.00-24	54	6 1/2	15	28			29	480	38
		12' x 24"	16	R-47 L-52 R-47	6	90	72		3	1,400	11	4 1/2	10,500	13.00-24	13.00-24	54	11 1/2	16	28			29	480	39
		13' x 25"	17	R-47 L-52 R-47 R-33	6	90	78		3	1,550	11	4 1/2	11,000	14.00-24	14.00-24	57	7 1/2	22	38			30	522	40
		12' x 24"	17 1/2	L-26 R-33	10	90	72		3	1,400	11	4 1/2	8,700	13.00-24	13.00-24	65	13	11	58 (b)			28 1/4	456	41
		12' x 24"	17 1/2	L-26 R-33	10	90	72		3	1,400	11	4 1/2	8,780	13.00-24	13.00-24	65	6 1/2	15	58 (b)			28 1/4	456	42
		12' x 26"	17 1/2	L-26 R-33	10	90	72		3	1,400	11	4 1/2	10,450	13.00-24	13.00-24	65	7 1/2	22	58 (b)			28 1/4	456	43
		13' x 28"	17	M-39 L-32	10	90	72	Hyd	3	1,550	11	4 1/2	10,750	14.00-24	14.00-24	65	13 1/2	24	58 (b)		Booster	28 3/4	456	44
		10' x 20"	17	32 1/2	6	90	54 1/4	Hyd.	2.9	635	9	5	5,440	10.00-24	10.00-24	25	4	11	60 1/2	Hyd.	Manual	19	420	45
		12' x 25"	17 1/4	R-36 L-40 R-36	11	90	R-85 1/2 L-91 1/2 R-85 1/2		2.7	1,315	11	4 1/2	8,635	7.50-20	12.00-24	52	13	11	63	Mech.	Manual	23	480	46
		12' x 25"	18 1/4	L-40 R-36	11	90	L-93 1/2 R-85 1/2		2.7	1,315	11	4 1/2	8,500	9.00-24	13.00-24	52	13	16	63	Mech.	Manual	25	480	47
		12' x 25"	18 1/4	L-40 R-36	11	90	L-93 1/2 R-85 1/2		2.7	1,450	11	4 1/2	9,000	9.00-24	13.00-24	60	13	16	63	Mech.	Manual	25	480	48
		12' x 25"	18	L-40 R-36	11	90	L-93 1/2 R-85 1/2		2.7	1,450	11	4 1/2	9,000	9.00-24	13.00-24	60	21	26	92 (d)	Mech.	Mech.	25	480	49
		12' x 28"	18 3/4	L-40 R-36	11	90	L-93 1/2 R-85 1/2		2.7	1,745	9	5 5/8	9,560	14.00-24	14.00-24	85	20	26	63	Mech.	Hyd.	28	480	50
		12' x 28"	18 3/4	L-40	11	90	L-93 1/2		2.7	1,745	9	5 5/8	9,560	14.00-24	14.00-24	85	20 1/2	26	92 (d)	Mech.	Hyd.	28	480	51
		12' x 24"	17 1/2	48	15	90	82			2,160	11	4 1/2	14,200	14.00-24	14.00-24	68	10 1/2	15	40	Hyd.	Com. Man. & Hyd. Com. Man.	21 1/2	360	52
		12' x 24"	17 1/2	48	15	90	82			2,160	11	4 1/2	10,000	14.00-24	14.00-24	68	10 1/2	15	40	Hyd.	& Hyd. Com. Man.	28	456	53
		12' x 24"	17 1/2	48	15	90	82			2,160	11	4 1/2	14,200	14.00-24	14.00-24	68	10 1/2	15	40	Hyd.	& Hyd. Com. Man.	21 1/2	456	54
		12' x 24"	18	40	15	90	85			1,410	11	4 1/2	7,700	12.00-24	12.00-24	45	9 1/2	12	48	Hyd.	& Hyd. Com. Man.	23"	480	55
		12' x 24"	18	40	15	90	85			1,410	11	4 1/2	8,450	12.00-24	12.00-24	45	10 1/2	13	48	Hyd.	& Hyd. Com. Man.	23	480	56
		12' x 24"	18	40	15	90	85			1,410	11	4 1/2	9,020	13.00-24	13.00-24	45	10 1/2	15	48	Hyd.	& Hyd. Com. Man.	23 1/4	480	57
		12' x 24"	18	40	15	90	85			1,410	11	4 1/2	9,875	13.00-24	13.00-24	45	10 1/2	15	48	Hyd.	& Hyd. Com. Man.	23 1/4	480	58
		12' x 24"	18	40	15	90	85			1,410	11	4 1/2	9,950	14.00-24	14.00-24	45	10 1/2	15	48	Hyd.	& Hyd.	24	480	59

Adams Div., Le Tourneau-Westinghouse Co., Peoria, Ill.
Allis-Chalmers Mfg. Co., Construction Machinery Div., Milw., Wis.
Austin-Western Works, 601 N. Farnsworth, Aurora, Ill.
Caterpillar Tractor Co., Peoria, Ill.
Galion Iron Works & Mfg. Co., Galion, O.
Huber Warco Co., Marion, O.
Pettibone-Mulliken Corp., 4,700 W. Division St., Chicago, Ill.

STEEL ROLLERS

	MAKE AND MODEL *		TYPE	WEIGHT, LB									COMPRESSION LB/LIN IN./ROLL FACE					
			Portable Tandem, Tandem, 3-Axle Tandem (3AT), 3-Wheel	On Guide Roll(s), Dry	On Compression Roll(s), Dry	Total Weight, Dry	On Guide Roll(s), Water Ballast	On Compression Roll(s), Water Ballast	Total, Water Ballast	On Guide Roll(s), Wet Sand Ballast	On Compression Roll(s), Wet Sand Ballast	Total, Wet Sand Ballast	Guide Roll(s), Dry	Compression Roll(s), Dry	Guide Roll(s), Water Ballast	Compression Roll(s), Water Ballast	Guide Roll(s), Wet Sand Ballast	Compression Roll(s), Wet Sand Ballast
1	AMERICAN-MARIETTA	AMROL # 8	Tandem	4,780	7,170	11,950	6,561	9,900	16,461	8,342	12,630	20,972	95	143	131	198	167	253
2		AMROL #12	Tandem	7,060	10,590	17,650	9,849	14,378	24,227	12,638	18,166	30,804	131	196	182	266	234	336
3	AUSTIN-WESTERN	31/2 ton	Tandem	2,690	4,258	6,948	3,565	6,487	10,052	–	8,716	12,281	67	101	89	154	–	207
4		5-8-ton	Tandem	4,868	6,755	11,623	6,768	9,755	16,523	–	12,755	19,523	97	135	133	195	–	255
5		8-12-ton	Tandem	6,369	10,100	16,469	9,812	14,471	24,283	–	18,842	28,654	118	187	184	268	–	348
6		10-14-ton	Tandem	6,369	13,723	20,092	9,812	18,094	27,906	–	22,465	32,277	118	254	184	335	–	416
7		8-11-ton	3-Wheel	5,074	11,337	16,411	6,494	13,201	19,695	–	15,065	21,559	127	215	162	366	–	412
8		10-12-ton	3-Wheel	6,930	13,132	20,062	8,730	16,392	25,122	–	19,552	28,282	157	328	198	409	–	488
9		12-14-ton	3-Wheel	6,930	17,110	24,040	8,730	20,870	29,600	–	24,630	33,360	157	356	198	434	–	515
10	BROWNING	3-5-ton	Port, Tandem	2,750	4,150	6,900	3,875	6,325	10,200	5,720	8,358	14,078	69	99	97	151	143	199
11		5-8-ton	Tandem	4,150	6,150	10,300	6,125	10,075	16,200	7,950	13,750	21,700	83	123	122	202	158	275
12		8-10-ton	Tandem	5,750	10,250	16,000	7,300	12,950	20,250	8,750	15,350	24,100	115	205	146	259	175	307
13		8-12-ton	Tandem	6,500	9,700	16,200	10,675	13,575	24,250	14,580	17,118	31,698	120	180	198	251	270	317
14		4-6-ton	3-Wheel	2,520	5,544	8,064	3,920	8,172	12,092	5,240	10,620	15,860	63	154	98	227	131	295
15		6-8-ton	3-Wheel	3,680	8,496	12,176	4,720	11,304	16,024	5,680	13,932	19,612	92	236	118	314	142	387
16		8-10-ton	3-Wheel	5,654	10,660	16,314	6,468	13,940	20,408	7,920	16,974	24,894	128	260	147	340	165	414
17		10-12-ton	3-Wheel	6,820	13,448	20,268	8,184	16,400	24,584	9,460	19,147	28,607	155	328	186	400	215	467
18		12-14-ton	3-Wheel	7,216	16,800	24,016	8,754	19,632	28,386	10,250	22,272	32,522	164	350	199	409	233	464
19	BUFFALO-SPRINGFIELD	KT-7A	Tandem	2,563	4,257	6,820	3,293	5,707	9,000	–	6,747	10,040	67	112	87	150	–	178
20		KT-8	Port, Tandem	3,015	5,235	8,250	3,715	7,455	11,170	–	8,595	12,310	79	138	98	196	–	226
21		KT-15A5	Tandem	4,650	7,550	12,200	6,250	9,850	16,100	–	–	–	93	151	125	197	–	–
22		KT-15A6	Tandem	4,650	9,250	13,900	6,250	11,350	17,600	–	–	–	93	185	125	227	–	–
23		KT-15A8	Tandem	5,750	11,000	16,740	7,250	13,250	20,520	–	–	–	115	220	145	265	–	–
24		KT-19A8	Tandem	6,790	10,025	16,815	9,652	14,525	24,177	–	–	–	126	186	179	269	–	–
25		KT-24D	Tandem	6,400	10,665	17,065	9,300	14,735	24,035	–	18,195	27,495	118	198	172	273	–	337
26		KT-25D	Tandem	6,400	14,465	20,865	9,300	18,535	27,835	–	21,995	31,295	118	268	172	343	–	407
27		KT-19A10	Tandem	7,430	13,710	21,140	10,182	17,895	28,077	–	–	–	138	254	189	331	–	–
28		KT-25E	3 AT	6,790 6,790	13,790	27,370	9,740 9,740	17,490	36,970	–	20,690	40,170	126 126	255	180 180	324	–	383
29		VM-31D	3-Wheel	6,200	14,700	20,900	7,850	17,388	25,238	–	20,076	27,926	141	368	178	435	–	502
30		VM-32D	3-Wheel	7,300	16,900	24,200	8,880	19,420	28,300	–	21,940	30,820	166	422	202	485	–	548
31	CH&E	3BT	Tandem	–	–	4,800	–	–	6,750	–	–	–	65	90	95	130	–	–
32		3BA	Tandem	–	–	6,300	–	–	8,100	–	–	–	65	130	95	165	–	–
33	ESSICK	560	Tandem	2,360	5,205	7,565	3,305	8,000	11,305	–	–	–	59	124	82	190	–	–
34		560C	Tandem	2,460	5,330	7,790	3,400	8,130	11,530	–	–	–	61	127	85	193	–	–
35		650C	Port, Tandem	2,575	6,825	9,400	3,500	9,600	13,100	–	–	–	64	162	86	228	–	–
36		800	Tandem	5,000	6,500	11,500	6,500	10,750	17,250	–	–	–	100	130	130	215	–	–
37		1050	Tandem	5,000	11,315	16,315	6,500	14,945	21,445	–	–	–	100	226	130	299	–	–
38		1200	Tandem	9,574	9,574	16,174	9,750	14,869	24,619	–	–	–	122	177	181	275	–	–
39		1400	Tandem	6,600	13,565	20,165	9,750	18,350	28,100	–	–	–	122	251	181	340	–	–
40	FERGUSON	3-5-ton	Port, Tandem	2,846	4,284	7,130	3,950	6,400	10,350	4,100	7,872	11,972	71	102	98	152	102	187
41		4-6-ton	Port, Tandem	3,594	5,406	9,000	4,698	7,622	12,320	4,848	8,992	13,840	89	129	117	181	121	214
42		5-8-ton	Tandem	4,250	7,450	11,700	6,350	11,250	17,600	7,000	14,000	21,000	85	150	125	220	140	280
43		8-12-ton	Tandem	6,080	11,318	17,398	8,721	15,471	24,192	10,480	18,578	29,058	112	209	161	286	105	344
44	GALION	3-5-ton	Tandem	2,850	4,280	7,130	3,880	6,520	10,400	–	–	–	71	102	97	153	–	–
45		4-6-ton	Tandem	3,580	5,290	8,870	4,560	7,500	12,060	–	–	–	89	126	114	179	–	–
46		5-8-ton	Tandem	5,200	6,850	12,050	7,100	10,550	17,650	–	–	–	104	137	142	211	–	–
47		8-10 1/2-ton	Tandem	6,400	9,800	16,200	8,200	13,400	21,600	–	–	–	128	196	164	268	–	–
48		8-12-ton	Tandem	6,540	9,850	16,390	9,500	14,710	24,210	–	–	–	121	182	176	272	–	–
49		10-14-ton	Tandem	6,540	14,050	20,590	9,500	18,410	27,910	–	–	–	121	260	176	341	–	–
50		13-20-ton	3 AT	6,195	13,660	26,050	8,960	18,850	36,770	–	–	40,420	115	270	166	349	–	–
51		10-ton Spoke	3-Wheel-24"	6,200	15,410	21,610	–	–	–	–	–	–	141	321	–	–	–	–
52		12-ton Spoke	3-Wheel-24"	7,450	17,900	25,350	–	–	–	–	–	–	169	373	–	–	–	–
53		8-10-ton	3-Wheel-20"	5,060	11,940	17,000	6,450	14,560	20,980	–	–	–	123	299	157	363	–	–
54		10-12-ton	3-Wheel 24"	6,300	14,450	20,750	8,440	18,875	27,315	–	–	–	143	301	192	394	–	–
55		12-14-ton	3-Wheel 24"	6,300	18,600	24,900	8,440	22,175	30,615	–	–	–	143	388	192	462	–	–
56	GENERAL	4-6-ton	Tandem	3,050	5,080	8,130	–	–	12,000	–	–	–	85	113	110	172	–	–
57	HUBER-WARCO	3-5-ton	Tandem	2,700	4,090	6,790	3,790	6,720	10,510	–	–	–	67	97	94	160	–	–
58		4-6-ton	Port,Tandem	3,330	4,920	8,250	4,360	7,660	12,020	–	–	–	83	117	109	182	–	–
59		5-8-ton	Tandem	4,820	7,440	12,260	6,560	10,740	17,300	–	–	–	96	148	131	214	–	–
60		8-10-ton	Tandem	6,460	9,780	16,260	8,180	12,760	20,940	–	–	–	129	195	163	254	–	–

* With a dry weight of at least 6,000 lb.
** Practically all models have a choice of gasoline engines. Only standard engine is listed. Price covers machine with standard engine.
‡ Available with diesel engine
(a) All models available with 4-speed transmission
(b) Available with 24-in. rolls.
(c) Available with 22-in. rolls.
(d) Available with 20-in. rolls.
(e) Available with 18-in. rolls.
(f) Available with torque converter and 2-range transmission (direct drive is standard)
(g) With machine in rolling position (wheels retracted).
(h) Torque converter available.
(i) Available with Cont. Y-112 WC engine.
(k) Speeds variable on torque converter models.
(l) Available with Herc. 1 x B-5 WC engine.
(m) Available with direct drive.
NA Specification not available from the manufacturer..

Specifications continued on page 136

	ROLL DIMENSIONS, IN.						POWER TRAIN														DIMENSIONS, OVERALL, IN.						PRICE	
							ENGINE							TRANSMISSION															
	Overall Rolling Width	Guide Roll, No. of Sections	Guide Roll, Dia x Width, (Total All Sections)	Guide Roll, Thickness	Compression Roll(s), Dia. x Width	Compression Roll(s), Thickness	Make**	Model	Gas or Diesel	Max. Brake HP	Rated RPM	No. of Cylinders	No. of Cycles	Fuel Tank Capacity, Gal.	No. of Forward Speeds	Range, Forward Speeds, MPH	No. of Reverse Speeds	Range, Reverse Speed, MPH	Clutch Type	Steering, Type	Length	Width	Height	Wheelbase	Ground Clearance	Outside Turning Radius	FOB, Factory, Standard Model	
	50	2	40x50	3/4	54x50	1	Cont.	FA-Z26	G‡	73	2400	6	4	35	2	1.5-5.5	2	1.5-5.5	TC	Hyd	164	60	88	114	18	228	$6,500	1
	54	2	48x54	1	60x54	1 1/4	Cont.	FA-Z26	G‡	73	2400	6	4	35	2	1.5-5.5	2	1.5-5.5	TC	Hyd	181	64	90	124	17	248	7,500	2
	42	2	32x40	1/2	48x42	5/8	Wisc.	VG4D	G	36	2200	4	4	12 1/2	2	1.13-4.46	2	1.13-4.46	Fric.	Hyd	129	52	69	85	11.3	170	$4,615	3
	50	2	41x50	5/8	53x50	7/8	Ford	J	G‡	75	1650	8	4	28	2(a)	.88-3.3	2	.88-3.3	TC	Hyd	177	64	84	120	15.5	170	7,432	4
	54	2	48x54	5/8	60x54	1 1/4	Ford	J	G‡	75	1650	8	4	28	2(a)	.99-3.72	2	.99-3.72	TC	Hyd	190	68	88	130	19	240	8,999	5
	54	2	48x54	5/8	60x54	1 1/4	Ford	J	G‡	75	1650	8	4	28	2(a)	.99-3.72	2	.99-3.72	TC	Hyd	190	68	88	130	19	240	9,624	6
	67	2	41x40	3/4	60x18	1 1/2	Ford	J	G‡	75	1650	8	4	33	2(a)	.99-3.73	2	.99-3.73	TC	Hyd	205	67	79	130	15	227	9,604	7
	75	2	44x44	3/4	69x20[b]	1 1/2	Ford	J	G‡	75	1650	8	4	33	2(a)	1.14-4.3	2	1.14-4.3	TC	Hyd	207	75	83	130	19.5	231	10,291	8
	83	2	44x44	3/4	69x24	1 1/2	Ford	J	G‡	75	1650	8	4	33	2(a)	1.14-4.3	2	1.14-4.3	TC	Hyd	207	83	83	130	19.5	231	10,943	9
	42	2	33x40	–	48x42	–	Cont.	Y-112	G‡	29	1800	4	4	18	2	2-5	2	2-5	TC	Hyd	132	53	80	86	12	162	NA	10
	50	2	40x50	–	52x50	–	Cont.	F-162	G‡	40	1800	4	4	28	4	2-14	4	2-14	TC	Hyd	175	58	81	126	13	228	NA	11
	50	2	40x50	–	52x50	–	Cont.	F-162	G‡	40	1800	4	4	28	4	2-14	4	2-14	TC	Hyd	175	58	81	126	13	228	NA	12
	54	2	48x54	–	60x54	–	Cont.	F-244	G‡	64	1800	6	4	28	4	2-14	4	2-14	TC	Hyd	198	64	90	141	17	252	NA	13
	68	2	38x40	–	55x18	–	Cont.	Y-112	G	29	1800	4	4	30	4	2-14	4	2-14	TC	Hyd	180	72	60	112	12	192	NA	14
	68	2	38x40	–	55x18	–	Cont.	F-162	G‡	40	1800	4	4	30	4	2-14	4	2-14	TC	Hyd	180	72	60	112	12	192	NA	15
	81	2	42x44	–	60x20½	–	Cont.	F-244	G‡	64	1800	6	4	30	4	2-14	4	2-14	TC	Hyd	194	80	64½	124	12	210	NA	16
	81	2	42x44	–	60x20½	–	Cont.	F-244	G‡	64	1800	6	4	30	4	2-14	4	2-14	TC	Hyd	194	80	64½	124	12	210	NA	17
	84	2	42x44	–	60x24	–	Cont.	F-244	G‡	64	1800	6	4	30	4	2-14	4	2-14	TC	Hyd	194	84	64½	124	12	210	NA	18
	38	2	30x38	NA	40x38	NA	Cont.	Y-112	G	29	2000	4	4	12	2	.5-5.3	2	.5-5.3	Fric	Hyd	127	49(g)	74	88	13	174	NA	19
	38	2	30x38	NA	40x38	NA	Cont.	Y-112	G	29	2000	4	4	12	2	.5-5.3	2	.5-5.3	Fric	Hyd	127	60(g)	74(g)	88	13(g)	174	NA	20
	50	2	40x50	NA	53x50	NA	Cont.	Y-162	G‡	49	2450	4	4	26	–(k)	1.5.4	–(k)	1-5.4	TC	Hyd	173	66	87	128	12.5	214	NA	21
	50	2	40x50	NA	53x50	NA	Cont.	F-162	G‡	49	2450	4	4	26	–(k)	1-5.4	–(k)	1-5.4	TC	Hyd	173	66	87	128	12.5	214	NA	22
	50	2	40x50	NA	53x50	NA	Cont.	F-162	G‡	49	2450	4	4	26	–(k)	1.-5.4	–(k)	1-5.4	TC	Hyd	173	66	87	128	12.5	214	NA	23
	54	2	48x54	NA	60x54	NA	Cont.	F-226	G‡	72	2450	6	4	34	–(k)	.1-5.6	–(k)	.1-5.6	TC	Hyd	195	70	91	131	14	236	NA	24
	54	2	48x54	NA	48x54	NA	Herc.	J x D	G‡	64	1400	6	4	30	4	1.1-5	4	1.1-5	–(f)	Hyd	196	72	102	131	19	236	NA	25
	54	2	48x54	NA	60x54	NA	Herc.	J x D	G‡	64	1400			30	4	1.1-5	4	1.1-5	–(f)	Hyd	196	72	102	131	19	236	NA	26
	54	2	48x54	NA	60x54	NA	Cont.	F-226	G‡	72	2450	6	4	34	–(k)	1-5.6	–(k)	1-5.6	TC	Hyd	195	70	91	131	14	236	NA	27
	54	2	45x54	NA	60x54	NA	Herc.	J x LD	G‡	72	1400	6	4	30	4	1.1-5	4	1.1-5	–(f)	Hyd	273	72	102	208	19	356	NA	28
	76	2	44x44	NA	69x20[bc]	NA	Herc.	J x LD	G‡	72	1400	6	4	35	4	1.1-5	4	1.1-5	–(f)	Hyd	209	76	81	128	15	228	NA	29
	76	2	44x44	NA	69x20[bc]	NA	Herc.	J x LD	G‡	72	1400	6	4	35	4	1.1-5	4	1.5-5	–(f)	Hyd	209	76	81	128	15	228	NA	30
	36	2	28x32	NA	–	1 1/8	Wis.	TH	G	14	2400	2	4	6.5	1	.5-3	1	.5-3	Fric.	Mech.	112	44	59	74	8	180	3,175	31
	36	2	28x32	3-8	–	2 1/2	Wis.	VE4	–	20	2400	4	4	6.5	1	.5-3	1	.5-3	Fric.	Mech.	112	44	74	74	9	180	3,450	32
	42	2	34x40	1/2	48x42	3/4	Wis.	VH-4D	G	30	2800	4	4	9	2	1-5.5	2	1-5.5	Fric.	Hyd	125	52	75	78	15	180	NA	33
	42	2	34x40	1/2	48x42	3/4	Cont.	Y-112	G	32	2400	4	4	9	2	1-5.5	2	1-5.5	Fric.	Hyd	125	75	75	78	15	180	NA	34
	42	2	34x40	1/2	48x42	3/4	Cont.	Y-112	G‡	32	2400	4	4	9	2	1-5.5	2	1-5.5	Fric.(h)	Hyd	135	83	75	78	5.5	180	NA	35
	50	2	40x50	3/4	53x50	3/4	Chry.	30	G‡	63	1800	6	4	32	2	1-5	2	1-5	Fric.(h)	Hyd	175	61	82	125	14	216	NA	36
	50	2	40x50	3/4	53x50	3/4	Chy.	30	G‡	63	1800	6	4	32	2	1-5	2	1-5	Fric.(h)	Hyd	175	61	82	125	14	216	NA	37
	54	2	48x54	3/4	60x54	1	Chy.	52	G	73	2000	8	4	32	2	.8-5.5	2	.8-5.5	Fric.(h)	Hyd	194	66	96	135	16	234	NA	38
	54	2	48x54	3/4	60x54	1	Chy.	52	G	73	2000	8	4	32	2	.8-5.5	2	.8-5.5	Fric.(h)	Hyd	194	66	96	135	16	234	NA	39
	42	2	33x40	5/8	48x42	3/4	Wisc.(j)	VH-4	G	26.5	2200	4	4	7	2	1.9-4.5	2	1.9-4.5	Fric.(h)	Hyd	132	80	60	86	12	202	4,750	40
	42	2	33x40	3/4	48x42	1	Wisc.(j)	VH-4	G‡	26.5	2200	4	4	7	2	1.9-4.5	2	1.9-4.5	Fric.(h)	Hyd	132	80	60	86	12	202	5,150	41
	50	2	40x50	3/4	53x50	1	Cont.	F-162	G‡	81	2400	6	4	25	2	1-4.5	2	1-4.5	TC	Hyd	174	60	67	124	13	216	7,175	42
	54	2	48x54	3/4	60x54	1 1/4	Cont.	F-226	G‡	73	2400	6	4	25	2	1-5.5	2	1-5.5	TC	Hyd	199	69	95	141	15	228	8,725	43
	42	2	34x40	5/8	48x42	13/16	Cont.	Y-112	G	32	2400	4	4	11	2	.5-5.6	2	.5-5.6	TC	Hyd	150	50	80	103	15	168	NA	44
	42	2	34x40	5/8	48x42	13/16	Cont.	Y-112	G‡	32	2400	4	4	11	2	.5-5.6	2	.5-5.6	TC	Hyd	159	58	80	103	9	168	NA	45
	50	2	40x50	13/16	53x50	15/16	IHC	UB220	G‡	70	2400	6	4	25	–(k)	.5-5.5(l)	2(k)	.5-5.5(l)	TC	Hyd	187	62	87	134	15	216	NA	46
	50	2	40x50	13/16	53x50	15/16	IHC	UB-220	G‡	70	2400	6	4	25	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	187	62	87	134	15	216	NA	47
	54	2	48x54	13/16	60x54	1 1/8	IHC	UB-264	G‡	90	2400	6	4	25	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	204	67	94	142	16	228	NA	48
	54	2	48x54	13/16	60x54	1 1/8	IHC	UB-264	G‡	90	2400	6	4	25	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	204	67	94	142	16	228	NA	49
	54	4	48x54	13/16	60x54	1 1/8	IHC	UB-264	G‡	90	2400	6	4	31	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	270	68	92	209	14	356	NA	50
	84	2	44x44	2	69x24[d]	2 3/8	IHC	UB-264	G‡	90	2400	6	4	38	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	213	84	81	135	18	217	NA	51
	84	2	44x44	2 1/2	69x24[d]	3 1/4	IHC	UB-264	G‡	90	2400	6	4	38	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	213	84	81	135	18	217	NA	52
	74	2	38x41	1 7/8	60x20[e]	2 1/8	IHC	UB-220	G‡	70	2400	6	4	NA	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	200	74	71	128	15.5	216	NA	53
	84	2	44x44	1 3/8	69x24[d]	1 1/2	IHC	UB-264	G‡	90	2400	6	4	38	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	213	84	81	145	18	217	NA	54
	84	2	44x44	1 3/8	69x24[d]	1 1/2	IHC	UB-264	G‡	90	2400	6	4	38	–(k)	.5-5.5	–(k)	.5-5.5(l)	TC	Hyd	213	84	81	135	18	217	NA	55
	45	2	30x36	–	39x45	–	Wisc.	THD	G	18	–	2	–	–	1	-2.45	1	-2.45	–	Hyd	117	49	52½	81	13	174	NA	56
	42	2	34x40	5/8	48x42	3/4	Herc.	I x B	G‡	41	2400	4	4	16/12	1	.5-5.6	1	.5-5.6	TC	Hyd	131	55	73	84	12	138	NA	57
	42	2	34x40	5/8	48x42	3/4	Herc.	I x B	G‡	41	2400	4	4	16 1/2	1	.5-5.6	1	.5-5.6	TC	Hyd	143	85½	73	84	7.5	138	NA	58
	50	2	40x50	5/8	53x50	7/8	Herc.	GO-173	G‡	58.5	2400	4	4	25 1/2	2	.5-5.5	2	.5-5.5	TC	Hyd	177	60	84	121	14	210	NA	59
																.5-5.75		.5-5.75										
	50	2	40x50	5/8	53x50	7/8	Herc.	GO-173	G‡	58.5	2400	4	4	25 1/2	2	.5-5.5	2	.5-5.5	TC	Hyd	177	60	84	121	14	210	NA	60
																.5-5.75		.5-5.75										

American-Marietta Co., Construction Equipment Div., Milwaukee 1, Wis.
Browning Mfg. Co., III Humble Ave., San Antonio 6, Tex.
Austin-Western Works, Baldwin-Lima-Hamilton Corp., 601 N. Farnsworth, Aurora, Ill.
Buffalo-Springfield Roller Co., 1210 Kenton St., Springfield, Ohio
CH&E Mfg. Co., 3849 N. Palmer St., Milwaukee 12, Wis.
Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.
Ferguson rollers: Shovel Supply Co., Inc., 4900 Hines Blvd., Dallas, Tex.

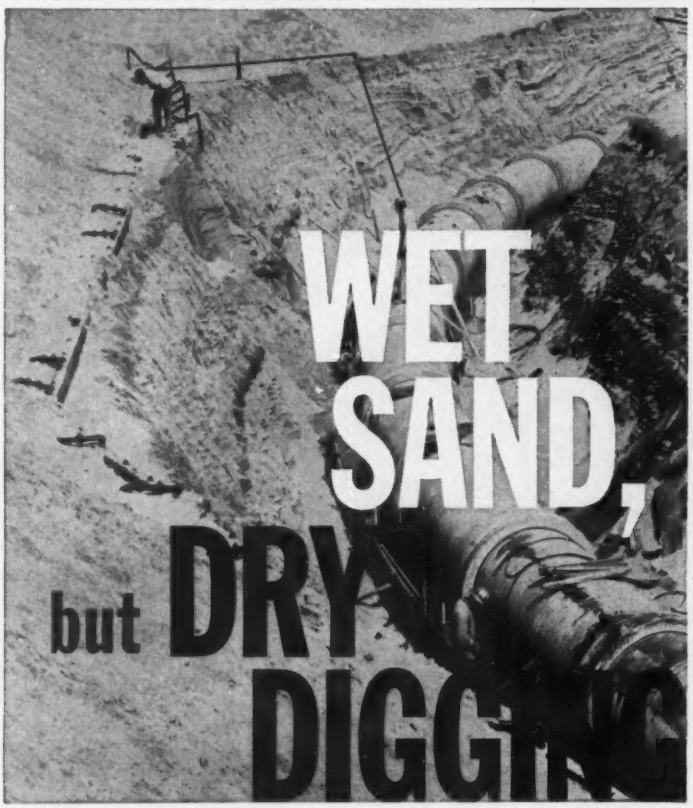
General Engines Co., Inc., U.S. Route 130, Thorofare, N.J.
Galion Iron Works & Mfg. Co., Galion, Ohio
Huber-Warco Co., 202 N. Greenwood St., Marion, Ohio

Specifications continued on page 136

STEEL ROLLERS *(continued)*

	MAKE AND MODEL *		TYPE	WEIGHT, LB									COMPRESSION LB/LIN IN./ROLL FACE					
			Portable Tandem, Tandem, 3-Axle Tandem (3AT), 3-Wheel	On Guide Roll(s), Dry	On Compression Roll(s), Dry	Total Weight, Dry	On Guide Roll(s), Water Ballast	On Compression Roll(s), Water Ballast	Total, Water Ballast	On Guide Roll(s), Wet Sand Ballast	On Compression Roll(s), Wet Sand Ballast	Total, Wet Sand Ballast	Guide Roll(s), Dry	Compression Roll(s), Dry	Guide Roll(s), Water Ballast	Compression Roll(s), Water Ballast	Guide Roll(s), Wet Sand Ballast	Compression Roll(s), Wet Sand Ballast
	HUBER-WARCO																	
61		8-12-ton	Tandem	6,164	10,000	16,164	9,059	15,040	24,099	–	–	–	114	185	170	278	–	–
62		10-14-ton	Tandem	7,044	12,960	20,004	9,806	17,600	27,406	–	–	–	130	240	181	326	–	–
63		10-ton	3-Wheel	6,450	13,750	20,200	–	–	–	–	–	–	146	343	–	–	–	–
64		12-ton	3-Wheel	7,750	16,450	24,200	–	–	–	–	–	–	176	411	–	–	–	–
65		14-ton	3-Wheel	9,025	12,175	28,200	–	–	–	–	–	–	205	479	–	–	–	–
66		10-12-ton	3-Wheel	6,360	13,960	20,320	8,230	16,720	24,950	–	–	–	144	349	187	418	–	–
67		12-14-ton	3-Wheel	6,360	17,085	23,445	8,230	19,645	27,875	–	–	–	144	427	187	491	–	–
68	INGRAM	3-5-ton	Tandem	2,855	4,685	7,140	3,955	6,645	10,600	–	–	–	72	111	99	158	–	–
69		4-6-ton	Port, Tandem	3,595	5,295	8,890	4,607	7,578	12,185	–	–	–	91	127	115	180	–	–
70		5-8-ton	Tandem	4,080	6,120	10,200	6,100	10,050	16,150	7,471	12,189	19,660	82	122	122	201	142	213
71		8-10-ton	Tandem	5,600	10,500	16,100	7,300	13,000	20,300	9,825	14,738	24,563	112	210	146	260	225	337
72		8-12-ton	Tandem	6,520	9,780	16,300	9,614	14,421	24,035	12,674	19,011	31,685	120	181	178	267	235	352
73		10-14-ton	Tandem	6,520	13,580	20,100	9,614	18,500	28,110	–	–	–	120	251	178	342		
74		6-ton	3-Wheel	3,320	5,580	8,900	4,402	7,498	11,900	5,960	8,940	14,900	92	155	122	208	166	248
75		8-ton	3-Wheel	4,862	7,293	12,155	6,234	9,351	15,585	6,866	10,299	17,165	122	203	156	260	172	286
76		10-ton	3-Wheel	5,637	10,470	16,107	7,261	13,484	20,745	8,943	15,227	24,170	128	260	165	337	203	381
77		12-ton	3-Wheel	7,115	13,213	20,328	8,527	15,827	24,364	11,365	17,047	28,412	161	330	194	396	258	426
78	LITTLEFORD	160	Port, Tandem	3,120	4,030	7,150	3,660	6,640	10,300	–	–	–	87	106	99	175	–	–

* With a dry weight of at least 6,000 lb.
** Practically all models have a choice of gasoline engines. Only standard engine is listed. Price covers machine with standard engine.
‡ Available with diesel engine
(a) All models available with 4-speed transmission
(b) Available with 24-in. rolls.
(c) Available with 22-in. rolls.
(d) Available with 20-in. rolls.
(e) Available with 18-in. rolls.
(f) Available with torque converter and 2-range transmission (direct drive is standard)
(g) With machine in rolling position (wheels retracted).
(h) Torque converter available.
(i) Available with Cont. Y-112 WC engine.
(k) Speeds variable on torque converter models.
(l) Available with Herc. 1 x B-5 WC engine.
(m) Available with direct drive.
NA Specification not available from the manufacturer..



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from the surf line, a Stang dewatering system is predraining an excavation area of beach sand. Note the steep angle and stability of the slopes. In any terrain, with any water handling problem, it will pay you to contact Stang— plan to on your next job.

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8221 Atlantic Avenue, Bell, Calif.
Omaha • Tulsa • Minneapolis • St. Petersburg
Mobile • Tacoma

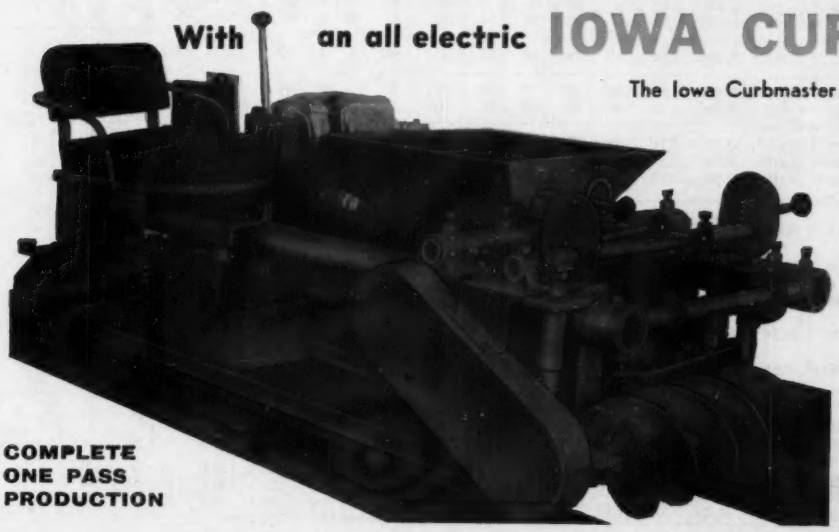
Specs for Your Files...

	ROLL DIMENSIONS, IN.						POWER TRAIN														DIMENSIONS, OVERALL, IN.						PRICE	
							ENGINE							TRANSMISSION															
	Overall Rolling Width	Guide Roll, No. of Sections	Guide Roll, Dia x Width, (Total All Sections)	Guide Roll, Thickness	Compression Roll(s), Dia. x Width	Compression Roll(s), Thickness	Make**	Model	Gas or Diesel	Max. Brake HP	Rated RPM	No. of Cylinders	No. of Cycles	Fuel Tank Capacity, Gal.	No. of Forward Speeds	Range, Forward Speeds, MPH	No. of Reverse Speeds	Range, Reverse Speed, MPH	Clutch Type	Steering, Type	Length	Width	Height	Wheelbase	Ground Clearance	Outside Turning Radius	FOB, Factory, Standard Model	
	54	2	48x54	3/4	60x54	1	Herc.	GO-226	G[‡]	77	2400	4	4	35	2	2-3.4	2	2-3.4	TC	Hyd	197	66	96	132	16	228	NA	61
	54	2	48x54	3/4	60x54	1	Herc.	GO-226	G[‡]	77	2400	4	4	35	2	2-3.4	3	2-3.4	TC	Hyd	197	66	96	132	16	228	NA	62
	76	2	44x44	1 3/4	69x20[(b)]	1 3/4	Herc.	GO-339	G[‡]	100	2000	6	4	40	2	2-3.8	2	2-3.8	TC	Hyd	206	76	81	127	18.5	243	NA	63
	76	2	44x44	1 3/4	69x20[(b)]	1 3/4	Herc.	GO-339	G[‡]	100	2000	6	4	40	2	2-3.8	2	2-3.8	TC	Hyd	206	76	81	127	18.5	243	NA	64
	76	2	44x44	1 3/4	69x20[(b)]	1 3/4	Herc.	GO-339	G[‡]	100	2000	6	4	40	2	2-3.8	2	2-3.8	TC	Hyd	206	76	81	127	18.5	243	NA	65
	76	2	44x44	1 1/8	69x20[(b)]	1 1/8	Herc.	GO-339	G[‡]	100	2000	6	4	40	2	2-3.8	2	2-3.8	TC	Hyd	206	76	81	127	18.5	243	NA	66
	76	2	44x44	1 1/8	69x20[(b)]	1 5/8	Herc.	GO-339	G[‡]	100	2000	6	4	40	2	2-3.8	2	2-3.8	TC	Hyd	206	76	81	127	18.5	243	NA	67
	42	2	34x40	5/8	48x42	5/8	Cont.	Y-112	G	32	2400	4	4	15	4	1-6	4	1-6	TC	Hyd	155	55	74	107	15	180	NA	68
	42	2	34x40	5/8	48x42	5/8	Cont.	Y-112	G	32	2400	4	4	15	4	1-6	4	1-6	TC	Hyd	169	84	74	107	9	180	NA	69
	50	2	40x50	3/4	53x50	7/8	Herc.	GO-298	G[‡]	105	2400	6	4	15	4	1-6	4	1-6	TC	Hyd	187	57	80	138	10	243	NA	70
	50	2	40x50	3/4	53x50	7/8	Herc.	GO-260	G[‡]	105	2400	6	4	15	4	1-6	4	1-6	TC	Hyd	187	57	80	138	10	243	NA	71
	54	2	48x54	1	60x54	1	Herc.	GO-298	G[‡]	105	2400	6	4	28	4	1-6	4	1-6	TC	Hyd	205	65	88	148	16	238	NA	72
	54	2	48x54	1	60x54	1	Herc.	GO-298	G[‡]	105	2400	6	4	28	4	1-6	4	1-6	TC	Hyd	205	65	88	148	16	238	NA	73
	69	2	36x36	3/4	48x18	3/4	Herc.	U175	G[‡]	76	2400	4	4	16	5	.25-8	5	.25-8	TC	Hyd	169	69	60	101	13	192	NA	74
	71½	2	38x40	7/8	55x18[(c)]	7/8	Herc.	GO-260	G[‡]	105	2400	6	4	18	5	.25-10	5	.25-10	TC	Hyd	177	72	66	110	16	NA	NA	75
	79	2	42x44	1	60x20[(bc)]	1	Herc.	GO-260	G[‡]	105	2400	6	4	26	5	.25-10	5	.25-10	TC	Hyd	194	79	79	125	16	204	NA	76
	79	2	44x44	1 1/8	69x20[(bc)]	1 1/8	Herc.	GO-298	G[‡]	105	2400	6	4	46	5	.25-6	5	.25-6	TC	Hyd	219	79	79	138	21	216	NA	77
	38	2	30x36	3/4	48x38	3/4	Wisc.[(B)]	VF-4D	G	25	24000	4	4	9	2	2-4	2	2-4	Fric.	Hyd	129	47	59	84	12	180	$5,250	78

Huber-Warco Co., 202 N. Greenwood St., Marion, Ohio
Ingram rollers: Acme Iron Works, 540 Culebra Ave., San Antonio, Tex.
Littleford Bros. Inc., 453 E. Pearl St., Cincinnati, Ohio

MODERNIZE YOUR CURB, GUTTER AND WIDENING OPERATIONS

With an all electric **IOWA CURBMASTER**



COMPLETE ONE PASS PRODUCTION

The Iowa Curbmaster is designed to completely build curb, gutter and widening slabs up to 10'. Has proven by experience to be the most versatile machine for that type of work now available. Materially cuts down pouring time and thereby provides more profit with lower initial investment. Additional heads available for cutting and compacting subgrade.

Offers many advantages over present methods. No extra rails • No compressed air • No tamping attachments • No clutches and transmissions • No hand shoveling to hopper • Provides one pass production with less hand labor.

In today's competitive construction, every minute saved is money in your pocket. Iowa Curbmaster cuts down on labor costs, increases production. Proven to be true, no matter what method you now use to build curb and gutter.

Write TODAY for FREE literature and complete information.

Modernize! Economize! With Iowa Curbmaster

IOWA CONSTRUCTION EQUIPMENT CORPORATION CEDAR FALLS, IOWA. U. S. A.

PNEUMATIC-TIRED ROLLERS

	MAKE AND MODEL		WEIGHT, LBS.						COMPACTION*			WHEELS									
			Empty	With Water Ballast	With Wet Sand Ballast	Max. Weight Per Wheel	Water Ballast Capacity, Gal.	Sand Ballast Capacity, Cu.Ft.	Empty	With Water Ballast	With Wet Sand Ballast	Total Rolling Width, In.	No. of Wheels, Front	No. of Wheels, Rear	Amount of Tire Overlap, In.	Tire Size, Standard	Tire Ply, Standard	Recommended Min. Tire Pressure, Psi	Recommended Max. Tire Pressure, Psi	Tire Ply, Optional
1	AMERICAN-MARIETTA	AMPAC #4	18,640	35,760	52,820	3,252	858	273	155	298	441	92	8	8	4¾	7.50-15	12	50	100	–
2	AMERICAN ROAD RUNNER (American Steel Works)	11-WG	8,300	16,849	26,000	2,860	1,025	137	94.3	191.5	295	84½	5	6	1/2	7.50-15	4	25	35	6-10
3	BROS	SP-54-B	6,000	13,164	21,600	2,400	860	120	88.2	194	318	68	5	4	1/2	7.50-15	4	35	90	6-10
4		SP-730-B	22,150	36,800	60,000	8,571	2,513	332	260	433	706	85	3	4	1	13.00-24	18	30	100	22-26
5	BROWNING	SPR-9	6,550	–	18,900	2,100	150	100	96	–	278	68	5	4	1/2	7.50-15	4	35	55	6
6		SPR-4	8,400	–	20,750	2,100	150	100	66(b) 96	–	206(b) 278	60	(c)	4	1/2	7.50-15	4	35	55	6
7		SPR-9-A	6,400	–	18,750	2,080	150	100	94	–	276	68	5	4	1/2	7.50-15	4	35	55	6
8		SPR-9-B	6,330	–	18,650	2,070	150	100	93	–	274	68	5	4	1/2	7.50-15	4	35	55	6
9		SPR-11	8,300	–	26,850	2,440	290	149	99	–	319	84	5	6	1/2	7.50-15	4	35	55	6
10		SPR-13	8,460	–	27,000	2,080	290	149	85	–	272	99½	7	6	1/2	7.50-15	4	35	55	6
11		18-T-9	9,500	–	36,000	4,000	240	140	–	–	–	64	5	4	–	7.50-15	10	–	110	–
12		25-T-11	18,470	–	50,000	4,545	490	300	196	–	532	94	5	6	1/2	9.00-20	12	60	100	–
13		30-T-7	21,300	–	66,500	9,500	520	390	250	–	783	85	3	4	1	13.00-24	18	70	100	22-26
14	BUFFALO-SPRINGFIELD	PSR-9	7,000	13,300	20,650	2,300	830	111	181	264	332	68	4	5	1	7.50-15	6	35	60	10
15		PSR-30	23,400	39,575	60,260(d)	8,600	1,948	271	274	460	700	86	3	4	1/2	13.00-24	18	60	100	22-26
16	FERGUSON	SP-10	7,170	–	21,470	2,385	–	110	106	–	315	68	4	5	1	7.50-15	4	34	50	6-12
17	(Shovel Supply Co., Inc.)	SP-12	8,600	–	24,800	2,255	–	147	100	–	300	83	5	6	1	7.50-15	4	34	50	6-12
18		2511	16,500	–	50,000	4,545	–	283	166	–	520	96	5	6	1	9.00-20	10	60	90	12-14
19		3507	21,700	–	70,000	10,000	–	402	238	–	769	96	3	4	–	13.00-24	18	60	90	22
20	GALION	9-T-12	9,200	18,000	26,100	2,900	970	130	128	250	362	68½	5	4	1/2	7.50-15	4	–	35	6-10
21	GRACE	11-H	6,500	12,000	16,700	2,000	650	85	76	143	200	84	5	6	1/2	7.50-15	4	28	32	6
22		30-B	20,000	N.A.	65,000	9,225	NA	400	190	NA	738	88	3	4	1	13.00-24	18	60	120	12
23	ROSCO	SR-904-T	6,600	12,912	19,730	2,192	755	101	96	187	286	69	5	4	3/8	7.50-15	4	35	35	6
24		SR-904	6,600	12,912	19,730	2,192	755	101	96	187	286	69	5	4	3/8	7.50-15	4	35	35	6
25		SR-9-T-2	6,800	14,420	19,950	2,216	748	100	99	208	290	69	5	4	3/8	7.50-15	4	35	35	6
26	SEAMAN-GUNNISON	7-20DTR(k)	13,600	18,600	40,000	3,600(k)	600	175	R or S(k) 0-450			R-86 S-72	2	8	–	F-15-26 R-7.50-15	10 6	12 30	30 65	– 10
27		9-27DTR(k)	17,600	24,400	54,000	4,000(k)	750	175	R or S(k) 0-500			R-86 S-72	2	8	–	F-18.00-26 R-7.50-15	10 10	10 60	25 110	– –
28		10-30RD(k)	19,500	25,200	60,000	5,200(k)	600	250	R or S(k) 0-650			R-89 S-84	2	8	–	F-18.00-26 R-7.50-15	10 10	10 60	25 110	– –
29		8-20DTRV(m)	15,750	21,200	40,000	3,600(m)	600	160	R or S(m) 0-450			R-86 S-72	2	8	–	F-15-26 R-7.50-15	10 6	12 30	30 65	– 10
30		10-27DTRV(m)	18,800	26,000	54,000	4,000(m)	750	160	R or S(m) 0-500 Vib. 25,000 lb.			R-86 S-72 V-72	2	8	–	F-18.00-26 R-7.50-15	10 10	10 60	25 110	– –
31	SOUTHWEST	PR-11	11,000	19,590	28,550	2,593	1,035	138	132	235	343	83	5	6	1/2	7.50-15	10	20	100	6
32	TAMPO	SP-91	6,700	12,830	20,000	2,220	750	100	110(p)	191(p)	290(p)	72	4	5	1/2	7.50-15	4	25	35	6-10
33		SP-111	8,500	16,000	24,000	2,180	900	120	114(p)	251(p)	316(p)	88	5	6	1/2	7.50-15	6	25	55	1-0
34		SP-900	15,220	22,220	28,850	3,210	815	109	356(p)	450(p)	522(p)	64	4	5	1/2	7.50-15	10	40	100	–
35		SP-1030	20,000	39,250	60,200	5,470	2,230	335	360(p)	562(p)	715(p)	94	5	6	1/2	9.00-20	12	40	100	–

*Lbs. per lineal inch of rolling width
(a)Available with Hercules diesel
(b)Two 34 x 30-in. rolls on front
(c)Combination TC and spring-loaded clutch
(d)Includes calcium chloride in tires
(e)Available with MM 445 engine
(f)Available with MM Util-D diesel ($12,950)
(g)Available with diesel engine
(h)Variable (torque converter)
(i)Available with Cont. HD-260 diesel ($11,200)
(k) Duo-Pactor: Combines pneumatic-tired and steel-roll compaction. In listing, "R" means rubber-tired roll, "S" means steel roll.
(m)Tri-Pactor: Same features as Duo-Pactor (k, above) with added vibratory steel-wheel rolling.
(p)Lbs. per lineal inch of tire contact width
(q)Available with TC
NA Specification not available from manufacturer
**Roller will be introduced in late 1960, specifications are not yet available

Specs for Your Files...

	POWER TRAIN														DIMENSIONS, OVERALL, IN.						PRICE	
	Make	Model	Gas or Diesel	Max. Brake HP	Rated RPM	No. of Cylinders	Displacement, Cu. In.	Fuel Tank Capacity, Gal.	No. of Forward Speeds	Range of Forward Speeds, MPH	No. of Reverse Speeds	Range of Reverse Speeds, MPH	Clutch, Type	Steering, Type	Length	Width	Height	Wheelbase	Ground Clearance	Outside Turning Radius	FOB, Factory, Standard Model	
	Cont.[i]	244	G	70	2,000	6	244	40	5	0-15	5	0-15	TC	Hyd	245	92	72	170	11	241	N.A.	1
	M-M	445	G	57	1,800	4	206	14	5	0-19	5	0-19	TC	Hyd	161	84 1/2	95	126	10	240	7,980	2
	Cont.[a]	F-226	G	73	2,000	6	226	40	3[h]	0-19	3[h]	0-20	TC	Hyd	150	69	91	120	10 1/2	221	5,790	3
	Cummins	JN6	D	130	2,500	6	401	60	4[h]	0-16	4[h]	0-16	TC	Hyd	224	90	117	174	16	321	20,215	4
	Cont.	F-244	G	64	1,800	6	244	16	4	2-13	4	2-13	TC	Hyd	178	69	74	116	9 1/2	234	6,150	5
	Cont.	F-244	G	64	1,800	6	244	16	4	2-13	4	2-13	TC	Hyd	177.5	69	74	116	9 1/2	234	6,720	6
	Cont.	F-162	G	40	1,800	4	162	11	4	2-13	4	2-13	TC	Hyd	178	69	74	116	9 1/2	234	5,890	7
	Cont.	F-162	G	40	1,800	4	162	11	4	2-13	4	2-13	Fric.	Hyd	178	69	74	116	9 1/2	234	5,250	8
	Cont.	F-244	G	64	1,800	6	244	44	4	2-13	4	2-13	TC	Hyd	192	90 1/2	74	129	9 1/2	244	8,250	9
	Cont.	F-244	G	64	1,800	6	244	44	4	2-13	4	2-13	TC	Hyd	192	100 1/2	74	129	9 1/2	252	8,450	10
	Cont.	F-244	G	64	1,800	6	244	–	4	–	4	–	TC	Hyd	193	66 1/2	93	131	9 1/2	240	–	11
	Cont.	M-330	G	83	1,800	6	330	28	4	2-15	4	2-15	(c)	Hyd	228	96	100	160	12	296	12,200	12
	Cont.	TD-427	D	114	1,800	6	427	43	5	2-14	5	2-14	TC	Hyd	252	91	112	176	14	320	21,130	13
	Cont.	F-226	G	73	2,400	6	226	35	3	0-15	3	0-15	TC	Hyd	150	68	88	120	11	226	N.A.	14
	Cummins	JN-6P	D	125	2,500	6	401	50	3	0-20	3	0-20	TC	Hyd	224	80	121	174	15 1/2	318	N.A.	15
	Oliver	S-660	G	37	2,000	4	144	15	6	2.5-4.5	2	2.5-4.5	Fric.	Hyd	150	68	90	120	10 1/2	180	5,150	16
	Oliver	S-770[o]	G	52	2,000	6	216	15	8	2.5-4.5	8	2.5-4.5	TC	Hyd	154	83	91	124	10	216	6,750	17
	M-M	Util.[f]	G	57	1,300	4	283.7	21	6	2-14.5	6	2-14.5	Fric.	Hyd	172	96	87	136	11	276	11,550	18
	GM	4-71	D	125	2,150	4	284	70	3	2.5-12	3	2.5-12	TC	Hyd	218	96	105	168	13	300	22,500	19
	IHC	UB-220	G	80	–	6	220	25	4	0.75-16	4	0.75-16	Fric.-TC	Hyd	150	69	96	120	11	221	N.A.	20
	Cont.	F-226	G	50	1,800	6	226	30	5	2.5-13	5	2.5-13	Fluid	Hyd	162	88	72	90	13	192	N.A.	21
	Cont.	TD-427	D	100	1,800	6	427	70	4	2.5-12	4	2.5-12	TC	Hyd	19'	7 1/2"	11'	136	12	200	N.A.	22
	Oliver[a]	66	G	38	2,000	4	144	13	(h)	0-14	(h)	0-14	TC	Hyd	151	69 1/2	92	121	10	228	5,975	23
	Oliver[a]	66	G	38	2,000	4	144	13	5	2.6-7.8	2	4.1-6.8	Fric.	Hyd	151	69 1/2	92	121	10	228	5,075	24
	Ford[a]	223	G	78	2,000	6	223	34	(h)	0-30	(h)	0-30	TC	Hyd	149	69 1/2	90	119	10	228	6,400	25
	IH	460	D	70	1,800	6	236	80	10	1.8-18.0	2	2.0-5.0	Disc	Hyd	286	86	81	128	10	148	11,500	26
	M-M	445	D	60	1,800	6	206														11,250	
	IH	660	D	90	2,400	4	282	80	10	2.5-20	2	2.0-4.0	Disc.	Hyd	288	86	83	134	10	148	15,750	27
	M-M	M-5	D	80	1,800	4	336														15,000	
	IH	660	D	90	2,400	4	282	50	10	2.5-20	2	2.0-4.0	Disc.	Hyd	297	95	83	148	12	162	17,250	28
	M-M	M-5	D	80	1,800	4	336														16,500	
	IH	660	D	90	2,400	4	282	80	10	1.8-18.0	2	2.0-5.0	Disc.	Hyd	286	86	81	128	10	148	15,600	29
	M-M	M-5	D	80	1,800	4	336														15,100	
	IH	660	D	90	2,400	4	282	80	10	2.5-20	2	2.0-4.0	Disc.	Hyd	288	86	83	134	10	148	19,600	30
	M-M	M-5	D	80	1,800	4	336														18,850	
	M-M	206H-4	G	57	1,800	4	206	30	5	0-13	6	0-13	TC	Hyd	153	83	83	123	11	300	N.A.	31
	Oliver[a]	660	G	45	2,200	4	155	10	6	0-11	6	0-11	TC[g]	Hyd	154	72	88	124	10	240	N.A.	32
	Oliver[a]	880	G	65	2,200	6	265	20	6	0-20	6	0-20	TC	Hyd	155	88	92	127	10	240	N.A.	33
	Oliver[a]	880	G	65	2,200	6	265	20	6	0-20	6	0-20	TC	Hyd	166	64	93	138	10	288	N.A.	34
	Oliver[a]	Twin 880	G	130	2,200	12	530	40	5	0-16	5	0-16	TC	Hyd	212	94	97	172	10	324	N.A.	35

American-Marietta Co., Construction Equipment Div., Milwaukee 1, Wis.
American Steel Works, 1211 W. 27th St., Kansas City 8, Mo.
Bros Inc., 1057 10th Ave., S.E., Minneapolis 14, Minn.
Browning Mfg. Co., 111 Humble Ave., San Antonio 6, Texas
Buffalo Springfield Roller Co., Springfield, Ohio
Chester Products Inc., Belle Ave. & B & O R.R., Hamilton, Ohio.
Ferguson rollers: Shovel Supply Co., 4900 Hines Blvd, Dallas, Texas
Galion Iron Works, Galion, Ohio
W.E. Grace Mfg. Co., 6000 S. Lamar St., Dallas 15, Texas
Littleford Bros. Inc., 453 E. Pearl St., Cincinnati, Ohio**
Resco Mfg. Co., 3118 Snelling Ave., So., Minneapolis 6, Minn.
Seaman-Gunnison, Milwaukee 18, Wis.
Southwest Welding & Mfg. Co., 3201 W. Mission Rd., Alhambra, Calif.
Tampo Mfg. Co., 1146 West Laurel St., San Antonio 7, Texas

BEST TRACK... BIGGEST SAVINGS

Allis-Chalmers boosts work hours, cuts costs with the best tractor undercarriage in the business. You get industry's toughest track...best designed track guards ...certified, permanently lubricated truck wheels, idlers, support rollers.

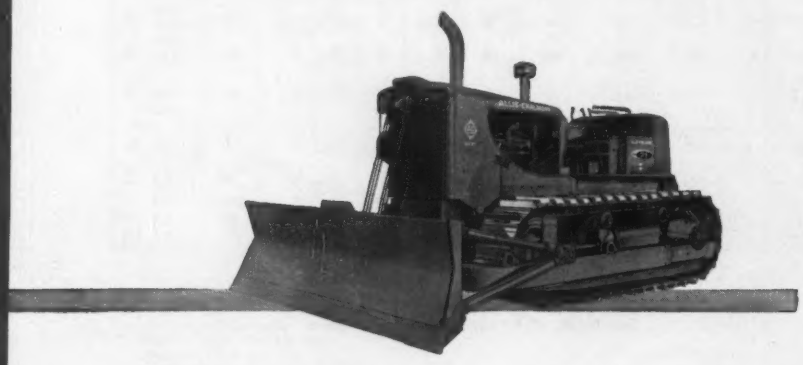
Next time you watch track shoes squeal and grind against jagged rock . . . or see 'em buried sprocket-deep in mud, consider this: Nothing slugs it out with tough conditions like an Allis-Chalmers tractor undercarriage.

Specially heat-treated track shoes, side bars, track pins and bushings are the industry's toughest. Bushings extend into counterbored side bars to seal out dirt, provide more bearing area.

Track guiding truck wheel guards provide a deep-flanged guide channel that keeps track riding true on sprockets, idlers and truck wheels even in the roughest and toughest going. The solid A-frame holds the truck frames in absolute alignment — keeps track running straight.

PERMA-SAFE truck wheels, idlers and support rollers on all Allis-Chalmers tractors roll on tapered roller bearings, are protected against dirt and moisture by Positive Seals. Factory-lubricated, they're certified never to need further greasing.

We invite a maintenance cost comparison with any other tractor undercarriage. We further invite you to inspect the Allis-Chalmers healthy, long-lived tractor engine, the all-steel main frame, double-reduction final drives and many other cost-cutting features. Your Allis-Chalmers dealer will be happy to give you full details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

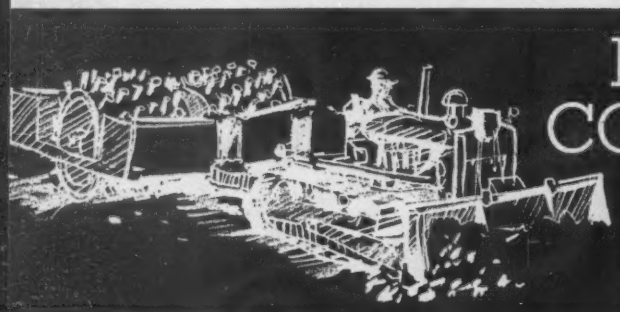


move ahead with

ALLIS-CHALMERS

power for a growing world

21



EARTH COMPACTION

HOW TO ACHIEVE BETTER RESULTS AT LESS COST

by M. D. MORRIS

COMPACTION EQUIPMENT.....continued

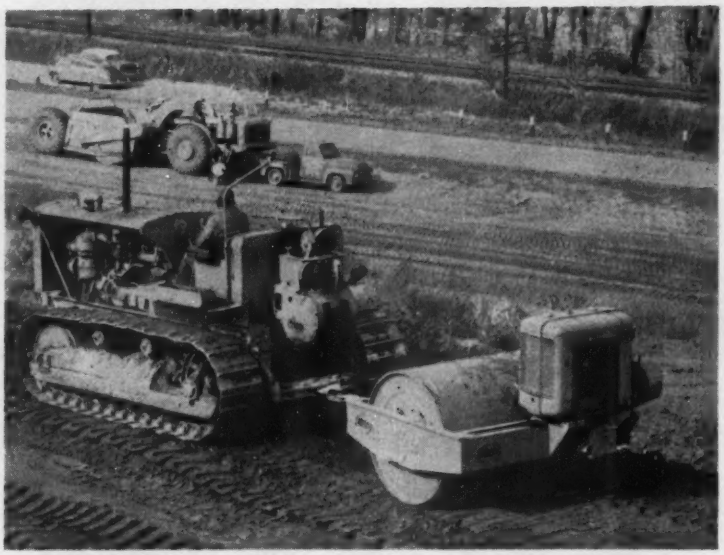
Vibratory Compactors

Sands and sandy silts are granular materials, and their soil particles stack by nesting in the void spaces between other grains. When shaken or vibrated they will shift themselves into the tightest or closest arrangement. This is maximum density. If these particles are dry, friction may prevent their shifting readily. If they are too wet, they will flow in solution since water is not compressible. The correct amount of water will lubricate the particle movement but will not displace the tightest grain arrangement. This is optimum moisture.

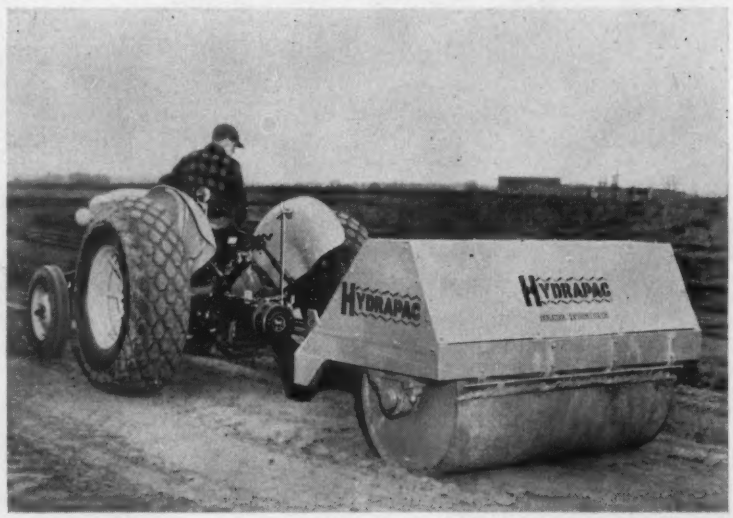
Maximum density at optimum moisture content can be achieved in some granular soils by some steel-wheel or rubber-tired static-weight units, but is best gotten by vibratory (dynamic) compactors.

There are two principal classes of vibratory compacting machines: rollers and plates. Rollers impart vibrations to the soil through a steel drum or rubber-tired wheels and thus, in effect, serve a double function. Plates generally are wheel mounted, but they apply their vibrations directly to the ground through skids or shoes.

In compacting granular material, some number (frequency) of blows in a given period gets it down faster and tighter than fewer blows of a heavier order (amplitude.) The combination of frequency and amplitude of vibra-



TOWED VIBRATORY ROLLERS—Gasoline engines usually power the vibrators of these units, but the one below is hydraulically driven by power take-off.



MULTIPLE-SHOE VIBRATOR—Big unit carries 12 shoes, covers 15-ft width.

tions gets varying results with varying sands, depending on grain size distribution and moisture, since every material has its own frequency rate (or resonance). Vibrations vary from 1,000 per min in some compaction machines to 5,000 per min in others, and it is more economical to use a machine that will vibrate at the soil's resonant frequency.

There are two schools of thought regarding resonant frequency. One claims that since the resonance factor of various granular materials determines their compactability and the depths to which compaction will be effective, then before going ahead with the selection of a dynamic compactor it is best to have some competent laboratory run a set of vibratory compaction tests. The other viewpoint is that only in compacted fills for plant foundations where the structure will contain vibrating machinery are such tests necessary. On highways or airports where the embankment is subjected to impact loads, or in dams where the stress is static, no laboratory vibration tests are needed. However, a full-scale test-trial on the job is always in order before any equipment is finally chosen.

Low frequencies (1,000 to 3,000 vpm), usually are generated in vibrating rollers. A small engine of some sort, through a transmission system, spins a shaft with a single or double eccentric-weight element inside the roll. Single-element vibrators require more input power, and their vibrations are of a higher amplitude, than the double-element type due to the size of weights.

High frequencies (3,000 to 5,000 vpm) handle less eccentric weight and, consequently, have lower amplitudes. (A high-frequency high-amplitude machine would require an inefficient amount of power for work done, and also would require too much strength in the structural frame.) High-frequency, low-amplitude machines can be either roll or plate type.

Plates, or shoes, or skids (as they are variously called) are individually vibrated by eccentric devices driven electrically, hydraulically, or mechanically. The eccentrics shake the plates both ways in all three directions (a "six-way"), or just up and down, or crosswise. Shoes are generally about 2x3 ft in contact surface, and are mounted on some self-propelled frame in rows of two to six. Smaller vibrating-plate type units of various sizes, guided individually by hand, are suited for compacting bottoms of trenches, confined areas, and steep slopes. Maintenance on the many moving parts of vibratory units is comparatively high.

One advantage of vibratory compaction is that it keeps the compacted surface fairly well sealed against evaporation of internal moisture and also against entrance of new water. This crusting effect permits rapid resumption of work after rain. Due to the penetrating effect of the vibrations, this crusting does not prevent uniform compaction through the entire lift, as is the case with crusting under a static roller.

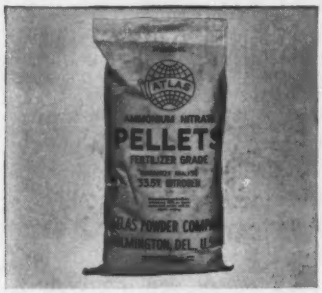
Tampo Manufacturing Co. (San Antonio, Tex.) has recently introduced a self-propelled vibratory roller of a size that is better used on base and flexible pavement construction but also is practical on fill work. The driving roll is 42½ in. wide with vibrating frequency variable up to 2,200 vpm. Although it weighs only 4 tons,

continued on page 147

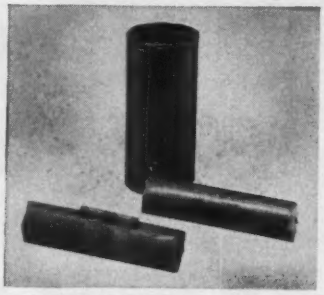
VIBRATORY COMPACTOR — Self-propelled rig gives 4,200 3-ton blows per min, generated electrically.

WHEN BLASTING CONTROL REALLY COUNTS...

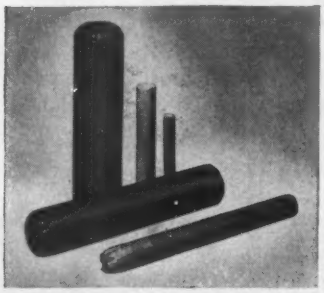
WHICH EXPLOSIVE?



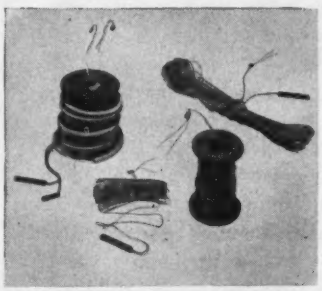
ATLAS PELLETS, a new form of ammonium nitrate, have both the density and sensitivity for efficient AN-oil blasting.



GIANT "75" PRIMERS have the wallop for complete detonation of both field mixed and plant mixed blasting agents.



GIANT GELATINS are for high velocity shattering action. Advantageous for wet work and hard, tight shooting.



ROCKMASTER® electric blasting caps achieve the staggered action so important for better breakage and control.

When you use the right combination,
all your equipment
moves in sooner...
works faster...
produces more.

In the center of Stroudsburg, Pa., a cut 2500 feet long and 85 feet deep had to be blasted out of the mountain-side for construction of the new U. S. Route 611. Some residences were as close as 100 feet from the construction site. The job called for real controlled blasting and virtually no vibration.

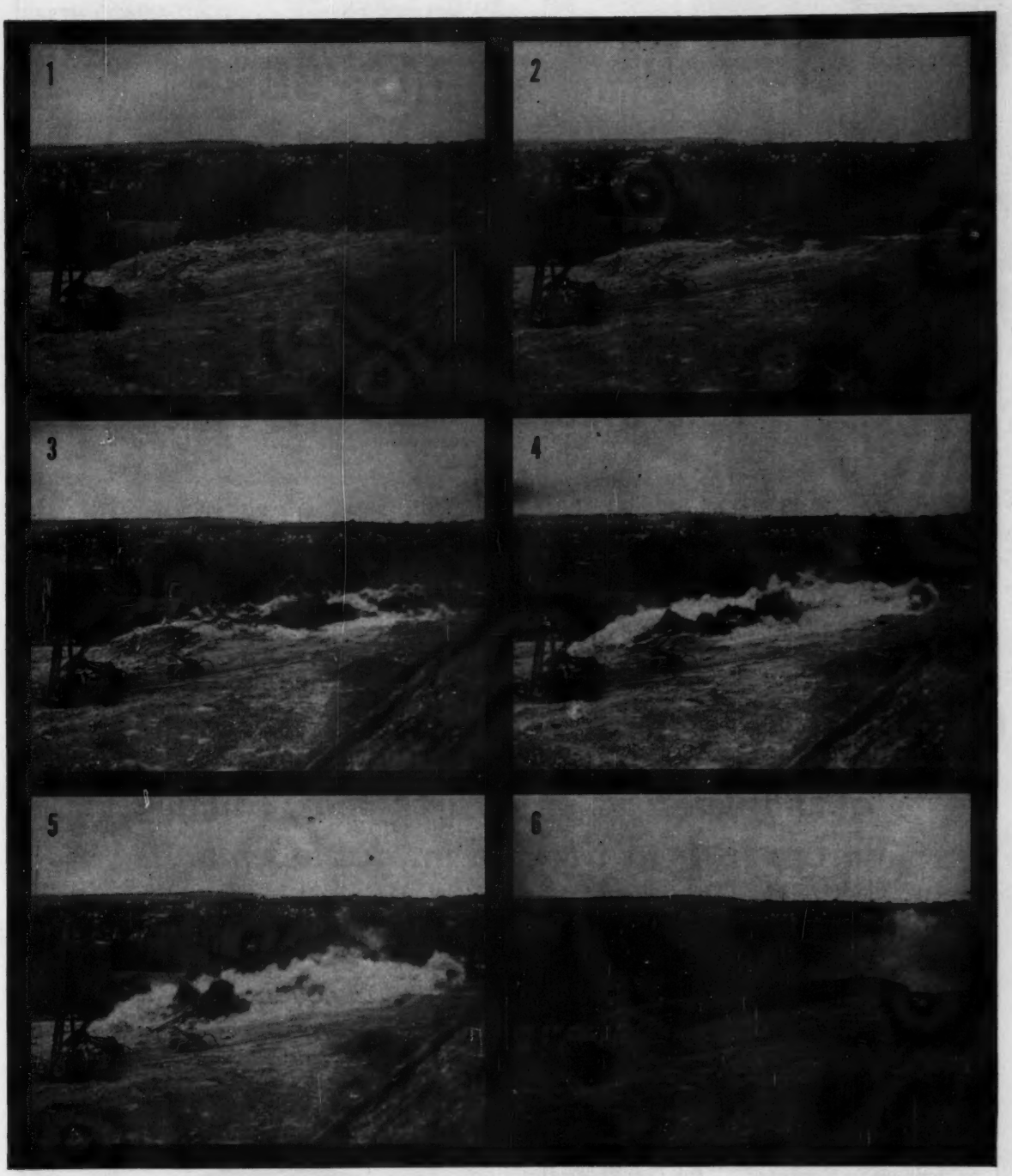
Working with an Atlas Technical Representative, the contractor, J. H. Beers, Inc., studied the site, the rock strata, and the surrounding area. Relying on advanced blasting technology to assure absolute control, they planned their blasting methods.

Which explosive for controlled blasting? It all depends on your rock strata and conditions. But, in this case they used Gianite pre-mixed ammonium nitrate blasting agent, detonated with Rockmaster millisecond delay electric blasting caps. The 2½-inch holes were spaced 7 feet apart, and were drilled to an average depth of 10 feet with 6 feet of stemming. In the sequence of photos, notice the "rippling" effect resulting from the use of the full Rockmaster series. There is no flying rock or noticeable vibration. The explosives energy is used only to uniformly break the rock and leave it in place for easy, efficient digging.

This blast is a dramatic example of the sometimes necessity for real controlled blasting. But blasting control should not be a sometimes practice. Controlled explosives energy not only breaks rock uniformly and thoroughly, but also means more economical operation. When you select the right combination of explosives, blasting agents, and blasting techniques, all your equipment moves in sooner, works faster, produces more. Helping you select the right combination is the job of your Atlas Representative. Backed by the complete Atlas line (including all forms of ammonium nitrate), he can help you get maximum control on every shot.

Our blasting cost chart, slide rules, and technical literature are designed to help you achieve maximum control and determine your lowest true blasting costs. Ask your Atlas Representative about them—or, write directly to:

ATLAS POWDER COMPANY
Explosives Division, Wilmington 99, Del.

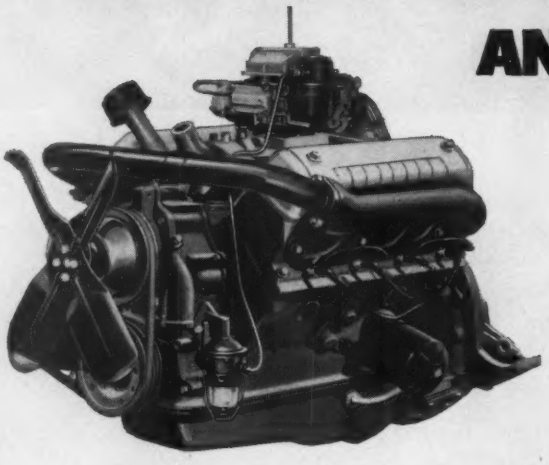


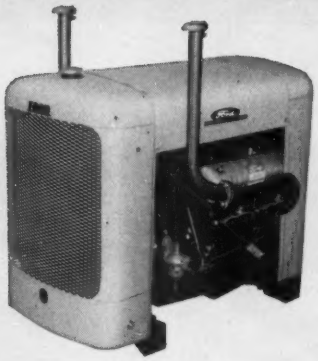
STROUDSBURG, PA. BY-PASS ON U.S. RT. 611 • CONTRACTOR: J. H. BEERS, INC., BANGOR, PA.

Rockmaster® millisecond delay electric blasting caps detonate Gianite pre-mixed ammonium nitrate blasting agent in this controlled shot. Explosives force breaks rock uniformly and thoroughly for easy digging. In-place blasting eliminates rock throw in congested areas. You'll get safer blasting . . . fewer complaints from near-by neighbors.

ATLAS EXPLOSIVES

Announcing the rugged FORD 292 V-8 INDUSTRIAL ENGINE AND POWER UNIT!





For every power need . . . a complete line of Ford Engines, ranging from 134- to 534-cu. in. displacement!

New, but no rookie in dependable, proven performance . . . the 292 Heavy Duty V-8 is built with Ford's characteristic attention to *advanced engineering*—based on years of Industrial Engine know-how! And it's available as a new economical foot- or skid-mounted power unit.

The 292 V-8 combines long-lived dependability with peak performance. These are counterbalanced engines . . . rugged, yet compact . . . economical, yet powerful . . . advanced, yet proven!

Ford Industrial Engines offer features like *rigid Deep-Block construction* that cuts vibration to the bone . . . *Short Stroke Design* for fuel economy and more usable horsepower . . . *Full-Flow oil filter* that cleans *all* the oil . . . and *Free-Turn valves* for longer valve life and improved seating.

The summation: More horsepower per pound of engine weight than ever before possible! *All this* in a line of engines that range from 134 to 534 cubic inches, including three Super Heavy Duty V-8's and three economical Diesels. Most engines are available as engine assemblies or complete power units. Gasoline models can be adapted to LP-Gas or natural gas fuel.

And don't forget that low-cost Ford parts are as near as your closest Ford Power Dealer for economical service *when you need it!*

Whatever your business, whatever your equipment . . . there's a Ford 4-, 6- or 8-cylinder engine that's right for your job. See your Ford Industrial Products Dealer today!

Ford
INDUSTRIAL ENGINES
AND POWER UNITS

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

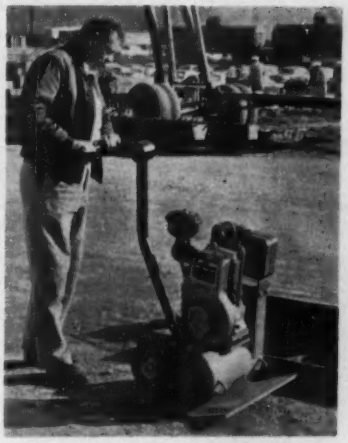
West of Rockies write to:
→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

the compacting power of this machine is reported to be equal to that furnished by a static roller of 16 to 20-ton capacity. Tampo has also introduced a meter for measuring the resonance frequency of materials being compacted. Called a Vibra-Meter, this dashboard-mounted device allows the roller operator to read the resonance frequency point on a dial and make roller adjustments accordingly for alleged full compaction efficiency.

Littleford Bros. (Cincinnati, Ohio) also makes a self-propelled vibrating roller. Weighing 1 ton, its compactive ability is listed as equal to that of an 8-ton static-weight roller.

Combining both static and vibratory compaction principles in the same unit, Buffalo-Springfield developed a three-axle roller with vibration on the middle roll. The vibratory roll is retractable, which allows the roller to be used as a two-axle tandem unit. Last year this roller was used successfully in several states for compacting base courses in lifts up to 9 in.

Another approach to combining static and vibratory compaction is taken by Austin-Western (Aurora, Ill.) and Galion Iron Works (Gal-



SINGLE-SHOE VIBRATOR—It gives up to 7,500-lb blows 2,500 per min.

VIBRATORY ROLLER—A 1-ton static, it's equivalent to an 8-tonner.

VIBRATORY GRADER—Separate engine and generator power four 26-in. shoes.

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... without
Screaming your lungs out.

Just speak in a *normal* voice . . . and let your compact, lightweight, "one-piece" Audio HAILER *do the work!* New "TP" (transistor-powered) model *projects* your words . . . *like a harpoon*—in a commanding "beam" . . . to anyone within a *half-mile* radius.

Yet Hailer is completely self-contained . . . NO external connections whatever . . . weighs only 5¾ lbs. . . . and runs on low-cost standard flashlight cells. Coupon below brings full details and price list.

AUDIO HAILER
The original power megaphone, and most widely used "one-piece" portable voice system on earth. Weatherproof finish in two-tone green or fire engine red.

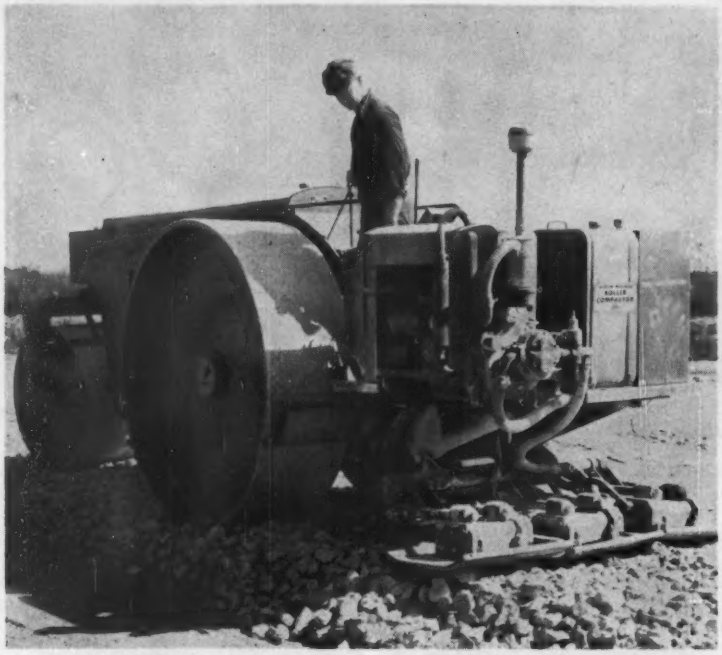
AUDIO HAILER® "TP" transistor-powered PORTABLE MEGAPHONE

SUPER-HAILER
To penetrate through severe adverse noise levels . . . new SUPER-Hailer concentrates a 16-watt "sound beam" to pierce the surrounding roar. Mile range in quiet conditions.

AUDIO EQUIPMENT CO., INC.
Port Washington 39, N. Y.

☐ Send color brochure and price list, describing "TP" Audio Hailer.
☐ Send details of "TP" Super-Hailer.

Name.....
Company or Dept.....
St. & No.....
City..... Zone No. (if any)..... State.....



DUAL COMPACTOR—Static weight compaction is augmented by vibrating pads.

ion, Ohio). They attach vibrating plates to their regular steel-wheel rollers.

Along a somewhat different line, Iowa Manufacturing Co. (Cedar Rapids) has combined vibratory compaction with large-rubber-tire rolling. Their larger towed unit weighs 30 tons, and a smaller version 12½. The machines push the soil straight down, with a minimum of lateral displacement.

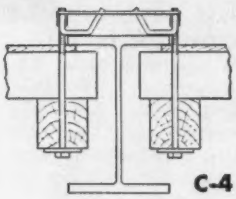
And Vibro-Plus Products (Stanhope, N. J.) has added vibrators to towed sheepsfoot rollers to make units that are effective in clays with high sand or silt content. Vibration frequency is variable from 1,400 to 1,600 vpm, and at maximum frequency the unit delivers a 10-ton impact.

Seaman-Gunnison (Milwaukee) has taken yet a different tack in multiple-type compaction equipment. They combine small-rub-

D.S.G. COIL HANGERS

Engineered to your job—save time and labor

Dayton Sure-Grip & Shore Company serve the industry with a complete line of coil and saddle hangers. They meet all specifications . . . have a high safety factor . . . are designed to reduce forming time and costs. While of premium quality, they're competitively priced and readily available through a national network of jobbers. Our engineers will gladly help you plan your special forming requirements and layouts.



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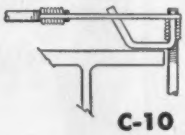

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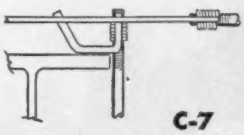

C-7

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PREMIUM QUALITY—MADE OF HIGH CARBON STEEL—YET COMPETITIVELY PRICED.

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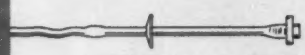

CRIMP SNAP-IN TIE NO. A-3 HI-CARBON ECONOMY TIE. EXCELLENT QUALITY.

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THE DAYTON SURE-GRIP & SHORE CO.

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"We use BANTAM for everything"

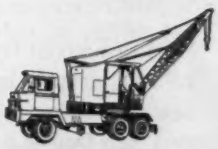
Independent travel and all-job versatility save time and money for big contractor

The T. L. James Co., Inc., of Baton Rouge, Louisiana, puts BANTAM's versatility and fast, easy action to work on all kinds of jobs. They are hours and dollars ahead on every job—excavating, laying pipe, loading trucks, handling materials, etc. "We use BANTAM for everything," says W. F. Chamberlain, job foreman. "The way we can walk and swing at the same time with our BANTAM, the easy operation, speed and good visibility make this the best machine for our kind of work." (Two-speed, independent travel is *standard* on BANTAM C-350.)

A case in point is this big storm sewer job under city streets. BANTAM excavated to 5- and 6-foot depths, hauled out old concrete slabs and put down 24-inch pipe—all in a maze of vital utility service lines, and all done without disturbing one of these functions. As Mr. Chamberlain tells it, "BANTAM's best for visibility. The operator sits close to the bucket. He can dig for services and feel his way without hazard. We save time and money because we don't tear up service lines when we dig with BANTAM."

Husky BANTAM C-350 hauls out heavy block of old concrete without disturbing vital service lines in the ground.

WORK AND EARN WITH 11 BANTAM-BUILT ATTACHMENTS



BANTAM T-350, 11-ton capacity —choice of four BANTAM-built carriers.

BANTAM CR-350, 11-ton capacity— self-propelled model; 1-man, 1-engine operation.

CHECK BANTAM'S PROFIT POSSIBILITIES YOURSELF

Whether excavating in tight quarters or handling big lifts, BANTAM is tops because it's unequaled in its class for production. And BANTAM lets you custom-make your rig to match your job and price needs exactly. Choose from more than 25 job-speeding optional features and get the most job-versatile rig you can own—BANTAM. See your BANTAM distributor today—ask for a demonstration.

CM-300

SCHIELD Bantam Co.

221 Park Street, Waverly, Iowa

WORLD'S LARGEST PRODUCER OF TRUCK CRANE-EXCAVATORS

NOW! STEEL-REINFORCED TREAD

stops up to 9 out of 10 cut and impact failures

Steel-Reinforced Tread*, with its thousands of steel filaments (that can't rust out), forms a virtually impenetrable mat between tread and body, provides exclusive new protection against cut and impact failures. Deeper tread at center and shoulders, *plus* Double-Strength Nylon, *plus* triple beads in 14.00 or over cross section make the U. S. Royal Super Con-Trak-Tor the world's toughest off-road tire, outperforming competitors by up to 95%. Don't settle for less on *your* jobs!

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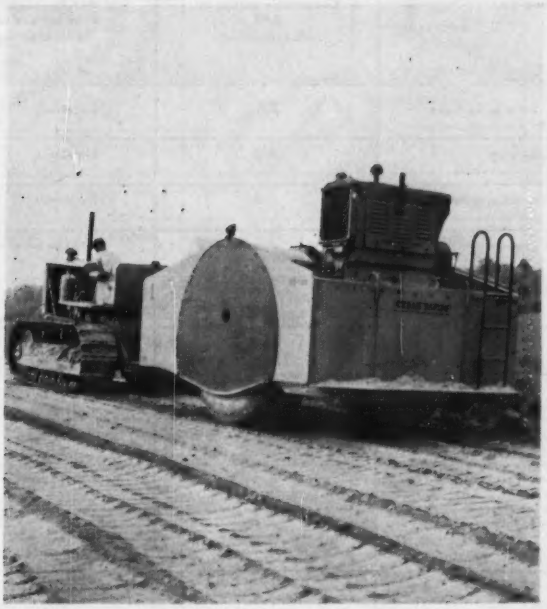
US United States Rubber

Rockefeller Center, New York 20, N. Y.



VIBRATORY ON RUBBER—On two large tires, 30-ton ballasted roller vibrates 600 to 1,400 cycles per min.

MULTIPLE COMPACTOR—Versatile self-propelled rig combines rubber and steel rolling. Vibration can be added.

ber-tire rolling with steel-wheel rolling—and vibration can be applied to the steel roll if desired. This self-propelled machine can be used on almost any type of soil under almost any conditions.

Its axles for tires and steel roll are in tandem and are hydraulically mounted so tires and roll can be used separately or together. In normal mixed-grade soils the machine makes two or three passes on the lift with the tires down. This applies kneading action through high unit loads, leaving compacted ruts and somewhat looser ridges. Next, the steel roll is lowered until the weight is carried by both axles. Then the roll compacts the ridges, and a uniform high density results.

Impact Compactors

When a compaction unit has a very low frequency and a very high amplitude it is classed as an impact compactor even though it does have a somewhat vibratory effect. Generally, these are hand-held tampers or rammers and are used in small areas and confined spaces. Most familiar are the air-powered tampers, used singly or with a fitting that holds three.

But Barco Mfg. Co. (Barrington, Ill.) makes a rammer with a self-contained gasoline engine that makes the entire unit jump up and down. Guided by an operator, the 210-lb machine jumps 13 or 14 in. off the ground.

Wacker Corp. (Hartford, Wis.) also makes a jumping rammer driven by a gasoline engine. The percussion rate of this 115-lb tool's 3-in. blows can be varied from 450 to 650 per min by throttle control. And Complete Machinery Co. (Long Island City 6, N.Y.) has a gasoline-powered 220-lb rammer that jumps 18 in. 80 times a minute.

Schield Bantam Co. (Waverly, Iowa) makes a crane-handled impact compactor. A concrete-filled steel box, with a total weight of 1,375 lb, operates as a drop hammer within a set of steel box leads. Hammer impact area is about 470 sq in., and maximum hammer drop is 10 ft.

continued on next page

IMPACT COMPACTOR—Powered by gas engine, it jumps up and down.

SOIL CLASSIFICATION SYSTEM and COMPACTION EQUIPMENT SELECTION *

	1			2	3	4
	Major divisions			Soil groups and typical names	Comparable groups in BPR classification	Value as foundation when not subject to frost action
1.	Coarse-grained soils		Gravel and gravelly soils	Well-graded gravel and gravel-sand mixtures, little or no fines	A-3	Excellent
2.				Well-graded gravel-sand mixtures with excellent clay binder	A-1	Excellent
3.				Poorly graded gravel and gravel-sand mixtures, little or no fines	A-3	Excellent
4.				Gravel with fines, silty gravel, clayey gravel, poorly graded gravel-sand-clay mixtures	A-2	Good to excellent
5.			Sands and sandy soils	Well-graded sands and gravelly sands, little or no fines	A-3	Excellent
6.				Well-graded sand with excellent clay binder	A-1	Excellent
7.				Poorly graded sands, little or no fines	A-3	Good
8.				Sand with fines, silty sands, clayey sands, poorly graded sand-clay mixtures	A-2	Fair to good
9.	Fine-grained soils containing little or no coarse grained material.		Fine-grained soils having low to medium compressibility; liquid limit < 50	Silts (inorganic) and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	A-4	Fair to poor
10.				Clays (inorganic) of low to medium plasticity, sandy clays, silty clays, lean clays	A-4 A-6 A-7	Fair to poor
11.				Organic silts and organic silt-clays of low plasticity	A-4 A-7	Poor
12.			Fine-grained soils having high compressibility; liquid limit < 50	Micaceous or diatomaceous fine sandy and silty soils, elastic silts	A-5	Poor to very poor
13.				Clays (inorganic) of high plasticity, fat clays	A-6 A-7	Poor to very poor
14.				Organic clays of medium to high plasticity	A-7 A-8	Very poor
15.	Fibrous organic soils with very high compressibility			Peat and other highly organic swamp soils	A-8	Extremely poor

* Suggestions based on Table 4 in "Classification and Identification of Soils" by Dr. Arthur Casagrande, American Society of Civil Engineers' Transactions paper No. 2351.

COMPACTION EQUIPMENT USE

COMPACTOR TYPE	SOIL BEST SUITED FOR	Max. Effect In Loose LIFT (in.)	DENSITY GAINED IN LIFT	MAX. WEIGHT (TONS)
STEEL TANDEM TWO AXLE	Sandy silts, most granular material with some clay binder	4 to 8	Average*	16
STEEL TANDEM THREE AXLE	Same as above	4 to 8	Average*	20
STEEL THREE WHEEL	Granular or granular-plastic material	4 to 8	Average* to Uniform	20
PNEUMATIC SMALL TIRE	Sandy silts, sandy-clays, gravelly sands & clays with few fines	4 to 8	Average* to Uniform	12
PNEUMATIC LARGE TIRE	All (if economical)	to 24	Average*	50
SHEEPSFOOT	Clays, clay silts, silty clays, gravels with clay binder	7 to 12	Nearly Uniform	20
VIBRATORY	Sands, sandy silts, silty sands	3 to 6	Uniform	30
COMBINATIONS	All	3 to 6	Uniform	20

** Density diminishes with depth*

EARTH COMPACTION . . .
continued

Equipment Selection

The ultimate goal is to build a stable, acceptable embankment in the shortest time at least cost. And the contractor gains or loses depending upon the equipment he selects to do the job. Unfortunately, there are no pat rules to make this choice a routine matter. The variations in specifications, soil types, machines available, and operational methods make this even more complex. There is no panacea that will work magic under all conditions.

But there are some bases for reasonable judgment in selecting a piece of equipment. Two accompanying tables give simplified general outlines of what to take

5		6	7	8	9	10	
Value as Wearing Surface for Stage or Emergency Construction		Potential frost action	Compressibility and expansion	Drainage characteristics **	Field compaction characteristics	Equipment Best Suited	
With dust palliative	With bituminous surface treatment						
Fair to poor	Excellent	None to very slight	Almost none	Excellent	Excellent	Crawler tractor, rubber tired equipment ***	1.
Excellent	Excellent	Medium	Very slight	Practically impervious	Excellent	Tamping roller, rubber tired equipment ***	2.
Poor	Poor to fair	None to very slight	Almost none	Excellent	Good to excellent	Crawler tractor, rubber tired equipment ***	3.
Poor to good	Fair to good	Slight to medium	Almost none to slight	Fair to practically impervious	Good to excellent	Crawler tractor, rubber tired equipment, tamping roller ***	4.
Poor	Good	None to very slight	Almost none	Excellent	Excellent	Crawler tractor, rubber tired equipment ***	5.
Excellent	Excellent	Medium	Very slight	Practically impervious	Excellent	Tamping roller, rubber tired equipment ***	6.
Poor	Poor	None to very slight	Almost none	Excellent	Good to excellent	Crawler tractor, rubber tired equipment ***	7.
Poor to good	Poor to good	Slight to high	Almost none to medium	Fair to practically impervious	Good to excellent	Crawler tractor, rubber tired equipment, tamping roller ***	8.
Poor		Medium to very high	Slight to medium	Fair to poor	Good to poor; close control essential	Rubber tired roller	9.
Poor		Medium to high	Medium	Practically impervious	Fair to good	Tamping roller	10.
Very poor		Medium to high	Medium to high	Poor	Fair to poor	Tamping roller	11.
Very poor		Medium to very high	High	Fair to poor	Poor to very poor		12.
Very poor		Medium	High	Practically impervious	Fair to poor	Tamping roller	13.
Useless		Medium	High	Practically impervious	Poor to very poor		14.
Useless		Slight	Very high	Fair to poor	Compaction not practical		15.

** Do not apply to undisturbed materials having fissures and root holes, such as most surface soils.
*** Ed. Note: Vibratory compactors also suited.

into account. By combining information from these tables with suggestions given previously, the range of field equipment can be narrowed down for consideration. Full-scale field trials should then be made under conditions expected to prevail throughout the job and, on the basis of comparative results, final choice should be made. **We shall learn in the next installment about methods, but no method can be successful without the proper machines.**

VIBRATORY ROLLERS

Bros Inc., Minneapolis 14, Minn.
Browning Mfg. Co., San Antonio 6, Tex.
Buffalo-Springfield Co., Springfield, Ohio
Essick Mfg. Co., Los Angeles 21, Calif.
Iowa Mfg. Co., Cedar Rapids, Iowa
Littleford Bros., Inc., Cincinnati 2, Ohio
Rolcor Industries, Minneapolis 3, Minn.
Rosco Mfg. Co., Minneapolis 6, Minn.
Seaman-Gunnison Corp., Milwaukee 15, Wis.
Shovel Supply Co., Dallas 21, Tex.
Tampo Mfg. Co., San Antonio 6, Tex.
Vibro Plus Products, Inc., Stanhope, N.J.
Western Equipment Div. (Douglas Motors Corp.), Milwaukee, Wis.

VIBRATORY PLATES

Austin-Western, Aurora, Ill.
Baldwin-Lima-Hamilton Corp., Lima, Ohio
Galion Iron Works & Mfg. Co., Galion, Ohio
International Vibration Co., Cleveland 10, Ohio
Jackson Vibrators, Inc., Ludington, Mich.
Jay Co., Columbus 7, Ohio
Kelley Machine Div. (Wiesner-Rapp Co.), Buffalo 23, N.Y.
Maginniss Power Tool Co., Mansfield, Ohio
Master Vibrator Co., Dayton, Ohio
Muller Machinery Co., Inc., Metuchen, N.J.
Racine Hydraulics & Machinery, Inc., Racine, Wis.
Shovel Supply Co., Dallas 21, Tex.
Stow Mfg. Co., Binghamton, N.Y.
Vibro Plus Products, Inc., Stanhope, N.J.
Wacker Corp., Hartford, Wis.

PNEUMATIC TAMPERS

Chicago Pneumatic Tool Co., New York 17, N.Y.
Davey Compressor Co., Kent, Ohio
Gardner-Denver Co., Quincy, Ill.
Ingersoll-Rand Co., New York 4, N.Y.
Joy Mfg. Co., Michigan City, Ind.
Schramm, Inc., West Chester, Pa.
Thor Power Tool Co., Chicago 1, Ill.
Worthington Corp., Holyoke, Mass.

SELF-PROPELLED SHEEPSFOOT

Bros Inc., Minneapolis 14, Minn.
R. G. Letourneau Inc., Longview, Tex.
Shovel Supply Co., Dallas 21, Tex.

TOWED SHEEPSFOOT ROLLERS

American Steel Works, Kansas City 8, Mo.
Bros Inc., Minneapolis 14, Minn.
Browning Mfg. Co., San Antonio 6, Tex.
W. E. Grace Mfg. Co., Dallas 15, Tex.
Koehring California Co., Stockton 4, Calif.
LeTourneau-Westinghouse Co., Peoria, Ill.
Littleford Bros., Inc., Cincinnati 2, Ohio
Shovel Supply Co., Dallas 21, Tex.
Southwest Welding & Mfg. Co., Alhambra, Calif.
The Slusser-McLean Scraper Co., Sidney, Ohio
Tampo Mfg. Co., San Antonio 6, Tex.

Maneuverability for quick spotting at crusher and under shovel is essential to maintain fast cycle time. Drivers say these big units handle almost as easily as their own cars—particularly like positive brake control on loaded downhill runs.

Talk about efficiency

...four replace nine

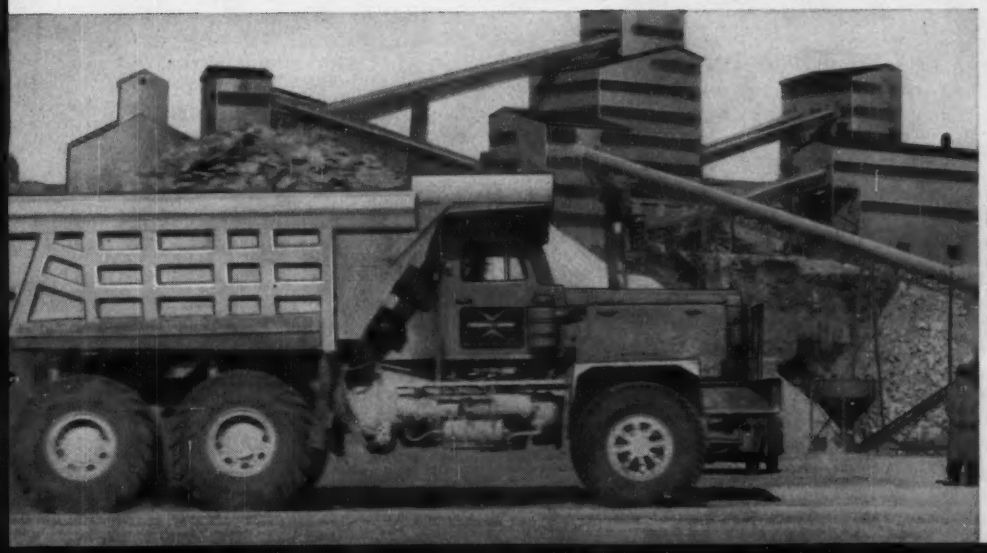
Big tonnage operations like those of Consumers Company, McCook, Ill., division of Vulcan Materials, Inc., depend on modern, efficient equipment to keep operating costs low. In the quarry, fast-action electric shovels pick up 5½-yard bites of shot rock. Four Mack LYSW end-dumpers, working two to a shovel, hustle forty-ton loads three-quarters of a mile to the crusher . . . a total of 288 trips each day. Before Vulcan put the four big Macks on the job, there were actually nine smaller competitive models working under the shovels.

Outstanding performance characteristics enable Macks to contribute to successful quarry and mining operations throughout the world. Plenty of power for fast getaways under full loads. Massive, self-equalizing, air-over-hydraulic brakes and easy, positive power steering for safe, fast maneuverability at shovel and crusher. Traditional Mack construction throughout to reduce downtime and maintenance.

These are sound reasons why Macks are first choice where profitable operations rely on truck performance . . . because they mean that when you purchase a Mack, you get a truck which will outwork and outlive anything in its class—that will pay for itself again and again by delivering top work capability per dollar invested. Your nearby Mack branch or distributor will be very glad to give you full details on the Mack best suited to your operation. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK FIRST NAME FOR **TRUCKS**

Fast, modern electric shovels have to hustle when Mack 40-tonners like these gang up on them. For non-stop production, Vulcan assigns two Macks to each shovel. Exceptional speed and ease of handling are characteristics praised by drivers.



Big trucks are the profit makers in quarry operations. LYSW Macks like these easily handle 40-ton loads—hustle 72 trips a day from quarry to crusher—require only routine service and downtime.

Construction Men in the News . . .

Builds World's Largest Office Building

CARL A. MORSE, president of Diesel Construction Co. and a man with a reputation for putting up skyscrapers in a hurry, is taking on the biggest project of his career. Morse, who assumes direct personal control over all Diesel's activities, is supervising the erection of the $100-million Grand Central City, touted as the largest office building in the world, in the heart of Manhattan.

"Grand Central City presents a tremendous problem in logistics," Morse says. "Our number-one headache will be moving all that material onto a 3½-acre site."

The 60-story octagonal-shaped structure, which will provide 2,679,263 sq ft of floor space, will require 44,000 tons of structural steel and 2,200,000 sq ft of cellular steel decking for the floor.

Like most skyscrapers in Manhattan, Grand Central City will be hemmed in on all sides. But, unlike the other buildings, construction crews are pressed in two other ways. The structure, which abuts the north side of Grand Central Station, must be built over the operating tracks and two platform levels of the terminal. And it is flanked at the second floor by north and southbound Park Ave. traffic ramps. And the building must go up without disrupting either rail or vehicular traffic.

Despite these difficulties, Morse, a firm believer in setting—and sticking to—tight construction schedules, plans to have the building ready for occupancy by the fall of 1962, two years and three months after the start of work. "Normally, a building of this size might call for a four-year schedule," Morse says, "but the only way to make money is to get in and get out." He believes that quality, as well as the pocketbook, suffers when construction lags.

In keeping with this thinking, Diesel purchased materials and awarded subcontracts for 40% of the work far ahead of time. This tactic gives both the general contractor and the subcontractors plenty of time to preplan so that the job rolls along on time once the work starts.

Morse's construction schedule runs like this: By Jan. 1, 1961, six months after the start of construction, demolition of the building on the site will be completed, and the foundation will be in. Next, crews will take two months to erect the columns that pierce two levels of station platforms. Then steel work will proceed at the average rate of 1½ floors per week until the building is topped out 11 months later. Eight more months will be needed to complete the job.

He's an Old Hand

To maintain this schedule, Morse can rely on his main asset: 35 years of skyscraper construction experience. His first 28 years were spent with the New York City realty and building firm of Bing & Bing where he served first as an assistant construction superintendent, then as general construction superintendent, and for the final 10 years as chief engineer in charge of construction. He has been associated with Diesel for seven years, the last five as president.

Morse didn't discard his hard hat when he donned his present title. His subordinates say that he still drops in on jobs unexpectedly and climbs around with pencil and pad, jotting down things that have to be done. In weekly reviews with project managers he's likely to bring up anything from the dismantling of a hoist tower to the preparation of an occupancy permit.

Right now, in addition to Grand Central City, Diesel is either building or about to build a half dozen other structures in Manhattan and suburban New York. The firm is also acting as consultant to owners on construction projects outside New York.

To keep abreast of all this, Morse works minimum 12-hr days that regularly run into the weekends. This summer he has had one break in his stiff schedule. That occurred when he took time out for his 35th class reunion at Yale where he received his B.S. degree in civil engineering.

Morrison-Knudsen

J. B. BONNY, formerly vice president and general manager of Morrison-Knudsen Co., Inc., is the newly elected president of the construction firm. He succeeds H. W. Morrison, chairman of the board and one of the founders of the company, who is relinquishing his post as president.

Bonny joined M-K in 1931 after running his own construction firm for several years. In 1932, he was named Los Angeles district manager. He was elected a vice president in 1943, a director in 1944, and general manager in 1948.

JAMES N. WELLS becomes executive vice president in charge of operations. He was vice president in charge of the Los Angeles district and other field projects.

JAMES D. McCLARY, previously vice president and assistant general manager, becomes executive vice president in charge of administration.

CARROLL F. ZAPP, formerly vice president and secretary, becomes vice president and general counsel.

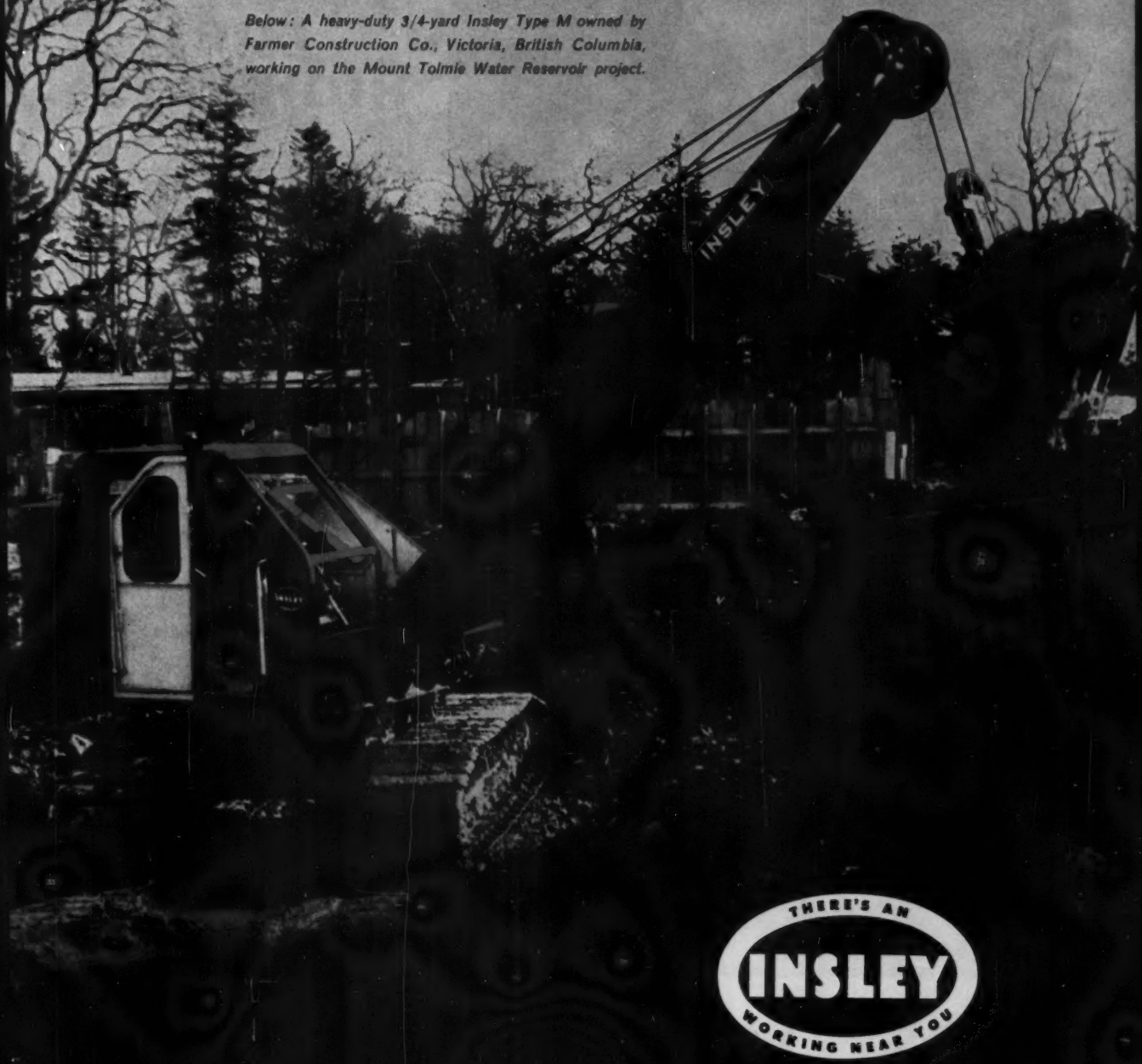
THOMAS L. SMITH, formerly company attorney, is now corporate secretary.

There's an Insley working near you

● Little wonder so many Insleys are in your area. An Insley makes good operators even better—more productive, more profitable. One reason for this is that the Insley is designed to give the operator every advantage. The cab's a good example. Wide open vision takes the guesswork out of crowding, swinging and dumping . . . makes for greater safety too. Dependability is another reason you'll find so many Insleys in your neighborhood. An Insley is built to pile up performance records, day after day, under seemingly impossible conditions.

There's an Insley working near you—any one of a complete line up to 45 tons in crane capacity, up to 1½ cu. yds. in bucket capacity, with crawler, self-propelled or truck mountings. There's an Insley distributor working near you too . . . with complete service facilities and 24-hour parts availability. See him today. Get all the facts on the Insley line.

Below: A heavy-duty 3/4-yard Insley Type M owned by Farmer Construction Co., Victoria, British Columbia, working on the Mount Tolmie Water Reservoir project.



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Hollow and solid drill steel
Digging bars

Rock anchor bolts

Bar mats
Dowel units
Road center strip
Reinforcing bars and accessories
Fabricated reinforcing bars
Hook-bolt dowels for concrete slabs
Steel roadway curbs
Nails and form wire

Beam guard rail
Cable guard rail
Steel guard posts
Galvanized bridge rail
Wire fence
Steel fence posts

Steel sheet and H-piles
Pipe piles

Formed steel bridge floor
Cables for suspension bridges
Structural steel shapes
Steel plates
Timber bridge hardware
Fabricated steel bridges, buildings
High-strength bolts, rivets
Corrugated roofing and siding

Wrought steel pipe
Galvanized culvert sheets

Strand for prestressed concrete
Wire rope and wire rope slings

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H. K. PORTER COMPANY, INC.

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f. **STEEL ROLLERS**
g. **PNEUMATIC-TIRED ROLLERS**

10¢ each, 10 or more, 8¢ each

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

Distributor Appointments

The White Motor Co.: Buffalo White Truck Inc., of Buffalo, N.Y., has been appointed distributor by the company.

Arcos Corp.: The following three distributors for welding rods and electrodes have been appointed: Earlbeck Welding Supplies, Inc. of Baltimore; Austin-Hastings Co. of Cambridge, Mass.; and Monson Welding Sales, Inc. of E. Syracuse, N. Y.

W. R. Grace & Co.: The Construction Chemicals Department of the Dewey and Almy Chemical Division has appointed A. H. Harris & Sons, Inc. of New Britain, Conn., as Connecticut distributor of admixtures for concrete.

Clark Equipment Co.: The Construction Machinery Division has appointed the following distributors: Road Machinery, Inc., of Devon, Pa.; and Carolina Equipment & Parts Co. of Columbia, S. C.

Bucyrus-Erie Co.: The following distributors have been appointed: Cate Equipment Co. of Salt Lake City, Utah; and Contractors' Equipment & Supply Co. of Albuquerque, N. M.

Highway Equipment Co.: The following distributors have been appointed: Contractors Equipment Co. of Lexington, Ky.; The Sawtooth Co. of Boise, Idaho; Parkway Machinery, Inc. of Pittsburgh, Pa.; Moody Equipment & Supply Co. of Little Rock, Ark.; Porter Supply Co. of Huntington, West Va.

Quick-Way Truck Shovel Co.: The following distributors have been appointed: Fuchs-Herbert Machinery Co. of Omaha, Neb.; R. B. Everett and Co. of Houston, Tex.; and Hawkeye Machinery Co. of Des Moines, Iowa.

continued on next page

8 CONTRACTORS PRE-DEWATER WITH FLYGT on BIG SEWER JOB

On a $23,160,000 sewer bond issue in Orange County, California, 8 separate contractors won their race against time and severe ground water intrusion with Flygt Electric, Submersible Pumps. The 19-mile Miller-Holder Trunk Sewer job experienced water intrusion from the first excavation, and it threatened to slow work to a crawl and run costs to astronomical highs. Key to the final success of the eight separate but simultaneous contracts was efficient, economical pre-dewatering developed jointly by Gridley Equipment Co. and Stanco engineers. Featuring more than 40 Flygt Electric, Submersible Pumps, the pre-dewatering systems drained and kept dry ditches along the right-of-way at substantial savings over other dewatering methods. Typical of contractor comments on the system:

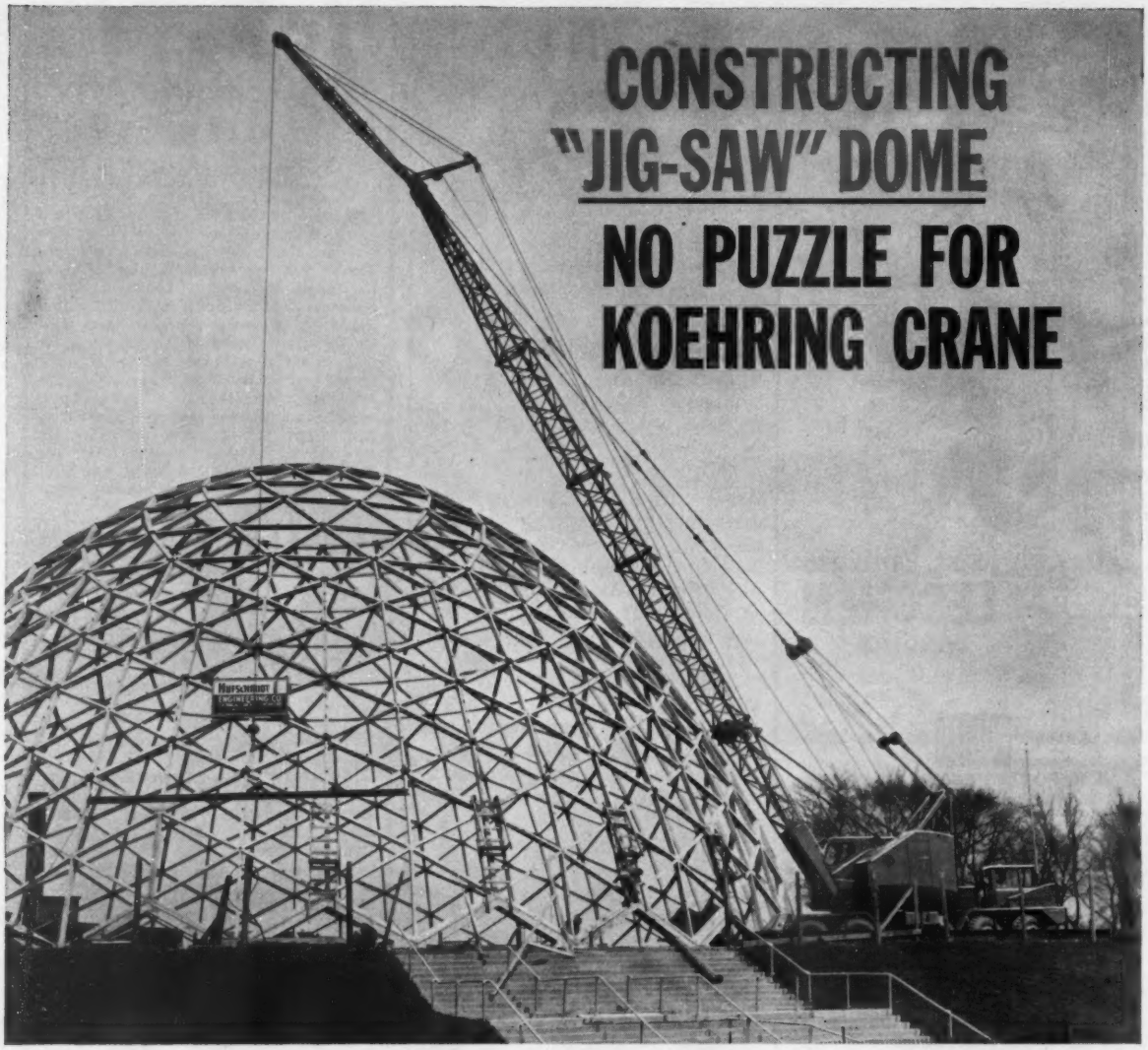
"This system really does the job," declares Pete Barrett on the J. S. Barrett Co. $2,667,-727 contract for installation of 5½ miles of 78-inch line. "You just drop Flygt Pumps in the hole, turn them on and make only periodical inspections. They keep the ditch dry at realistic cost with none of the trouble normally experienced with suction-type pumps."

"These Flygt Pumps give you a chance to go home and sleep at night," says N. A. Artukovich on his company's $1,846,870 contract for placement of more than 5 miles of 51- to 63-inch pipe. "The Flygts require little attention and keep the pipe and ditch dry despite continuous intrusion conditions. The pumps handle a lot of solids."

Flygt Electric, Submersible Pumps range from 1½" 85 gpm to 8" 3100 gpm capacity. Heads to 220' — higher in tandem. Designed and built for tough applications, they are adaptable to any dewatering job. Flygts run continuously with little attention, handle a high degree of solids, need no priming, are easy to handle and service. Ask today for literature and an on-the-job demonstration.

FLYGT
PUMP BETTER ELECTRICALLY — USE FLYGT!

WESTERN SALES & SERVICE
Stanco
MFGS. & SALES INC.
1666 Ninth St. (Corner of Olympic & Ninth)
Santa Monica, California



CONSTRUCTING "JIG-SAW" DOME

NO PUZZLE FOR KOEHRING CRANE

Koehring truck crane with 85-ft. boom and 25-ft. jib handles all erecting of precast forms for unique dome.

A group of unique new landmarks is rising in Milwaukee's Mitchell Park: giant domes of concrete and glass for a modern botanical garden. Milwaukee's Hufschmidt Engineering Company has the task of casting and erecting the concrete hexagons, diamonds and triangles that form the framework for two of these eye-catching structures.

Fast accurate placing of these precast forms — some of which weigh more than 5000 pounds — calls for a crane with real *precision* control and smooth easy mobility. That's why Hufschmidt uses a Koehring 445 . . . a crane that easily meets all the requirements, speeds completion of the job.

Ask *your* Koehring distributor for all the facts about Koehring truck cranes . . . they can make money for you, too!

More Work Capacity...
More Profit Per Dollar Invested!

See your distributor about the Koehring Equipment Show— Waukesha, Wis., Week of Sept. 19.

K33

KOEHRING HEAVY DUTY

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DIVISION OF KOEHRING COMPANY
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BUFFALO-SPRINGFIELD KOMPACTOR

COMPACTS MORE THAN 1200 YDS. PER HR.

COSTS ONLY 2¢ A YARD TO RUN

It's been doing it and proving it for years — for contractors all around the country.

Self-propelled, field-proved Kompactor meets job density specs with fewer passes — costs less to run. It operates on an interrupted pressure principle, staggered rows of heavy steel pads direct all compaction effort downward. Result: more uniform density of materials, no displacement of materials due to "bull-dozing" ahead of the wheels, less time and effort required to meet compaction specifications.

Another reason for Kompactor's widespread popularity is its ability to wheel close to culverts, walls, and abutments eliminating costly and time-consuming hand tamping. And since the Kompactor is self-propelled, doesn't tie-up expensive equipment in compacting work. Ask your Buffalo-Springfield distributor for details, or write for booklet.

See your distributor about the Koehring Equipment Show. Waukesha, Wisconsin . . . Week of September 19th

BUFFALO-SPRINGFIELD CO.
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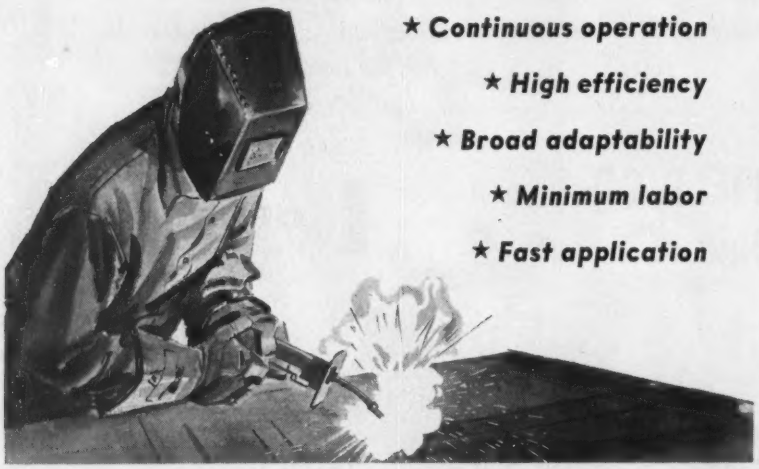
For Automatic and Semi-Automatic Hardsurface Welding

RANITE manual rod quality now available in tubular coil wire for automatic and semi-automatic hardsurface welding



★ ***Continuous operation***

★ ***High efficiency***

★ ***Broad adaptability***

★ ***Minimum labor***

★ ***Fast application***

RANOMATIC will be sold through your local **RANITE** distributor. For detailed information and prices ask him for bulletin No. R101, or write direct to Rankin Manufacturing Company.

RANKIN MANUFACTURING COMPANY

616 S. MARENGO AVE. P. O. BOX 631 ALHAMBRA, CALIF.

SALES AND SERVICE...

continued from page 159

On the Sales Front

Armco Drainage & Metal Products, Inc.: William E. Harrison has been appointed manager of the Washington, D.C. office. He succeeds David H. Henderson, who retired after holding the post since 1942. John R. Coffey has been named Ohio state sales manager.

Symons Clamp & Mfg. Co.: John Imonetti has been appointed Northeast regional sales manager and Ken Boelter has been appointed Southeast regional sales manager.

Beaver-Advance Corp.: Walter Eichhorn has been appointed district manager of the firm's sales engineering and rental operations soon to be established in the metropolitan New York area.

Yuba Consolidated Industries, Inc.: The Southwest Welding & Manufacturing Division has appointed two sales representatives for its line of construction machinery. Philip H. Sweet will cover the Southwestern United States, working out of Alhambra, Calif. Andrew J. Friedrich in San Francisco will cover the Northwestern states and the province of British Columbia in Canada.

Erie Strayer Co.: George Duncan is the new Southeastern representative for the company. He will represent both the concrete plant and clamshell bucket divisions in Tennessee, North and South Carolina, Georgia, Florida, Alabama, and Mississippi.

Diamond T Motor Truck Co.: Paul R. Gordon has been appointed district manager for the state of Michigan. Owen L. Davis has joined the company as district manager for the states of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut.

In the Main Office

General Motors Corp.: V. L. Snow has been named general manager of the Euclid Division. He succeeds R. Q. Armington who has resigned in order to devote full time to his family manufacturing interests.

continued on page 163

International Harvester Co.: Robert B. Bradley, formerly president of International Harvester Co. of Canada, Ltd., has been elected vice president and executive head of the Construction Equipment Division of International Harvester Co. He succeeds Harald T. Reishus, vice president, who has headed the Construction Equipment Division since its formation in 1944 and who now is retiring.

Associations

Wire Reinforcement Institute: Bruce D. Bennett, manager, construction material sales, American Steel & Wire Division, U. S. Steel Corp., was named president of the Wire Reinforcement Institute at a recent annual meeting of the U. S. and Canadian trade association.

American Iron and Steel Institute: The following officers have been elected: B. F. Fairless, president; Max D. Howell, executive vice president; William M. Akin, Arthur B. Homer, and C. M. White, vice presidents; George S. Rose, vice president and secretary; Charles M. Parker, vice president—research and technology; E. O. Sommer, Jr., treasurer; Leo Teplow, assistant vice president; and F. A. Coombs, assistant secretary.

Special Mention

Simplex Forms System, Inc.: Purchase of the Forms Division of Waco Manufacturing Co., a subsidiary of Waco-Porter Corp., by Simplex was announced jointly by G. A. Markuson, Simplex president, and H. P. Albrecht, president of Waco-Porter. The acquisition includes inventory and manufacturing equipment. Many of the present distribution points for Waco forms will be maintained by Simplex and new outlets will be established.

Safway Steel Products Inc.: The Beatty Scaffold Inc. organization is disposing of physical assets to Safway Steel Products, Inc. The new organization will be a division of Safway and will operate from the same locations now controlled by Beatty in San Francisco, Oakland, and Seattle. D. E. Beatty, president of Beatty Scaffold, was the founder of Safway Steel Products Inc. in 1936.

DEPENDABLE SOIL SAMPLING EQUIPMENT IS NO PROBLEM FOR THIS DRILL CREW

With a contract to obtain representative samples of the soil strata along the center line of an important link on the new Interstate Highway System, this contractor is using the S&H Split Barrel Sampler for recovering samples in this immediate area. At the next location, sampling for a bridge foundation, the S&H Shelby Tube Sampler will be utilized to recover the undisturbed samples that are necessary.

Sprague & Henwood's sampling equipment is designed for long, dependable service with a resulting minimum cost. The complete line of sampling devices and equipment is described in the new Bulletin 300.

SPRAGUE & HENWOOD, Inc.
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MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.
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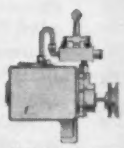
"Snow removal jobs go three times faster with MONARCH POWER HYDRAULIC CONTROLS"

DYNA-MIGHT Battery-Operated

HY-LO-JACK



HY-LO FOR JEEP Fan-Belt Driven

says
E. H. UECKER
Madison Square Garage, Grand Rapids, Mich.

Mr. Uecker has found what everyone finds — that Monarch Power Hydraulic Controls make snow removal jobs easier, faster, and more economical! One man controls the plow from the cab . . . instant up-and-down action with the flick of a wrist. Battery-operated or fan-belt driven units. See your dealer. Free folder upon request.

MONARCH ROAD MACHINERY COMPANY
1331 Michigan St., N.E. Grand Rapids 3, Michigan

Construction Equipment News...

General Purpose Fork Truck is The World's Biggest

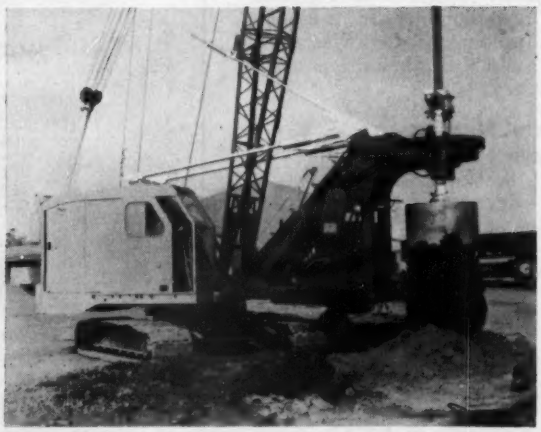
Measuring 29 ft in length and 11 ft in width, the Clark Ranger 700 fork truck is a giant that can lift 35 tons. The forks alone weigh 3,000 lb and are operated by four 9½-in.-dia hydraulic cylinders—two act as tilt cylinders, the other two handle lifting. The hydraulic system contains four pumps—one for steering, one for lifting and tilting, one for side shifting, and one for the torque converter.

Other features include four-wheel drive, power steering, four-speed transmission with power-assisted brakes. The engine is a 6-cyl diesel unit with a 425-cu-in. displacement. Maximum speed is 12 mph in both forward and reverse. There are two sets of operating controls, and swiveling seat permits the operator to use the forward or rear controls for good visibility while working in either direction.—**Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.**

Scraper Loads Itself

Separate electric motors drive the elevator on the Hancock 10E2 elevating scraper. Teamed with the 143-hp D Tournapull, it becomes a self-loading tractor-scraper combination with a capacity of 10 cu yd. Maximum speed is 30 mph. The 10E2 scraper was specially designed as a part of this combination.

The slat-type elevator chops and pulverizes the material and carries it off the scraper blade into the bowl. The pulverizing action also makes it easy to spread the material uniformly, and it can eliminate a separate finishing tool.—**LeTourneau-Westinghouse Co., 2301 NE Adams St., Peoria, Ill.**

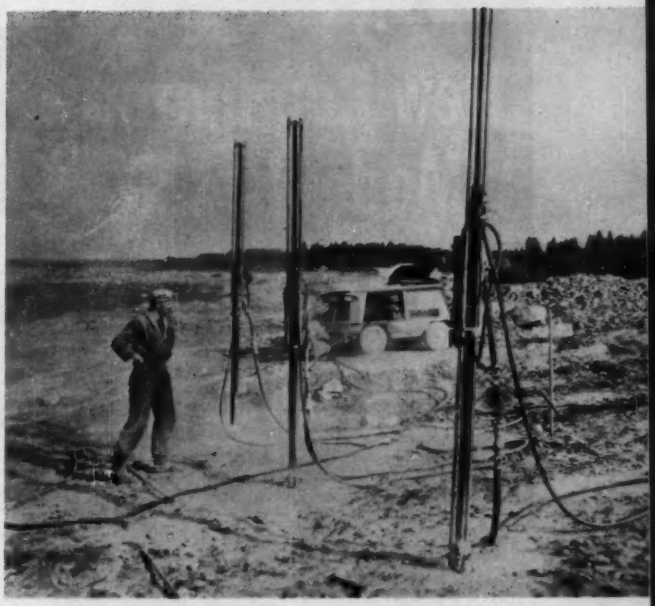


Earth Drill Fits Cranes

Contractors now can equip their cranes with an hydraulically controlled earth drill that is operated from the crane cab. The drill fits ¾-yd crawler cranes or 1-yd truck cranes. The Calweld 150-C drill is complete with its own power unit and can be mounted in 1 hr without special tools.

Hole diameters range from 12 to 120 in. Telescoping and triplescoping models of the unit can drill to a depth of 150 ft without additional drill stems. Maximum depth is 200 ft. The 150-C can drill as much as 45 ft per hr. — **Calweld, Inc., 7222 E. Slauson Ave., Los Angeles 22, Calif.**

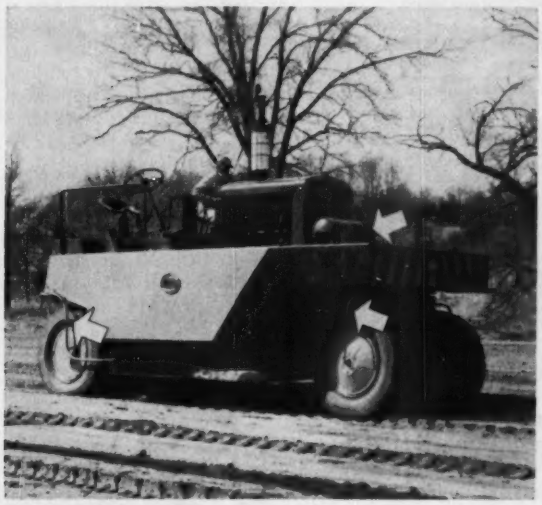
Self-Standing Mountings Support Air-Operated Drills



Lightweight, self-standing mountings and air-operated benchers are designed for small-scale drilling projects or for work in areas, where it is difficult or uneconomical to move and operate wagon drills. The BMP 31 unit also can be used for shaft sinking. One man can operate two of them simultaneously.

The 80-lb bencher has a 2⅝-in. piston dia and is designed to handle 5-ft steel changes. When fully extended, the unit is 156½ in. long; when contracted, the length is 87⅝ in. Two tie rods, connected to the bencher's double-acting piston rod hold a drill in place. A regulating valve at the air cylinder insures constant feed pressure.

To set the unit up for operation, two 1¼-in. anchor bolt holes are drilled about 8 in. deep. Next, anchor bolts and wedges are secured in the holes. And last, the bottom portion of the bencher's feed cylinder assembly is fastened to the anchor bolts by wedges and permits the operator to set the feed at the desired angle.—**Atlas Copco, 545 Fifth Ave., New York 17, N.Y.**

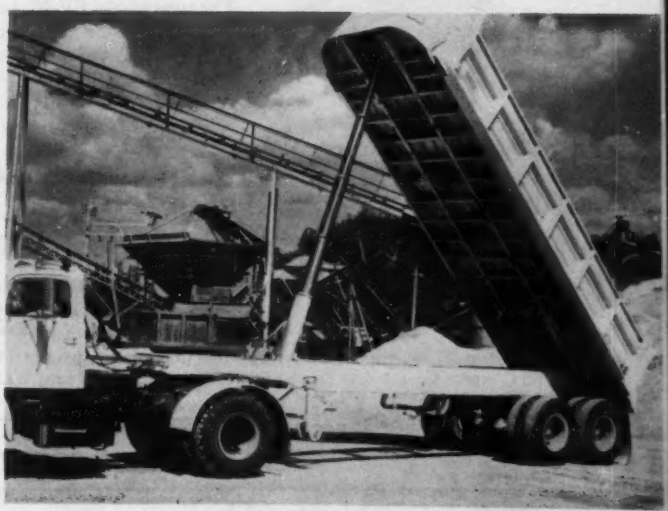


Roller's Tire Pressures Can Be Changed On-the-Run

Standard equipment on Bros SP-730B self-propelled roller is a tire inflation device that permits pressure changes on-the-run. The unit also is available as a modification kit for SP-730 rollers. The kit includes a compressor, gages, control stand, air line, and protection covers for each tire.

The inflation device is helpful in compaction of weak or wet subgrade materials in several stages because tire contact areas can be changed without changing the ballast.—**Bros Inc., 1057 Tenth Ave. S. E., Minneapolis 14, Minn.**

Corrugated Construction Cuts Dump Trailer Weight



Front-mounted telescopic hoists and 1-in.-deep, V-shaped corrugations keep the dead weight of Galion dump trailers to a minimum. A boxed top roll section gives additional rigidity to the body and keeps the sides from spreading during any stage of the dumping cycle.

Standard trailer lengths range from 16 to 28 ft; the capacity range is 10 to 35 cu yd. The bodies can be used on any combination of axles, depending upon existing state weight laws.—**Galion Allsteel Body Co., Galion, Ohio.**

New Remington Model EV-26 CONCRETE VIBRATOR

Now the world's most reliable, simplest-to-use, motor-in-head vibrator and only 2⅝" in diam.

1. Heavy-duty, 6-ply hose with anti-slip finish. 3-wire cord anchored permanently inside.

2. Welded commutator leads plus thermal overload protection switch prevent motor burnouts.

3. Heavy-duty precision ball and roller bearings on motor shaft and tip.

4. Special Remington eccentric throws out 10,000 vpm with an extra-strong kick.

5. Carburized, alloy steel head with welded tip resists abrasion. Only 2⅝" diameter for work in tight places.

Now with the new Remington Model EV-26 you get a motor-in-head vibrator of exceptional reliability. Remington backs the Model EV-26 with a six-month guarantee, and it has capacity for fast work in walls, floors, footings and beams. You can plug it into any 110-volt line. The powerful motor kicks over at 10,000 vpm. A positive, 2-button, waterproof switch is conveniently located near the operator's hand. A special overload switch protects against motor burnouts on both AC and DC current.

The new Model EV-26 is economical and easy to use in one-man operation. It comes in 7', 14' or 21' hose lengths with 25' of special heavy-duty cord. Ask your distributor to show you the new Model EV-26 and the complete line of Remington concrete vibrators.

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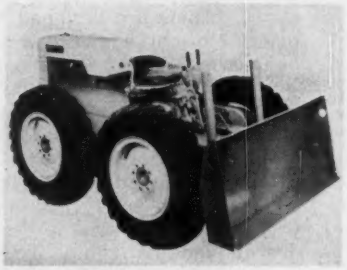
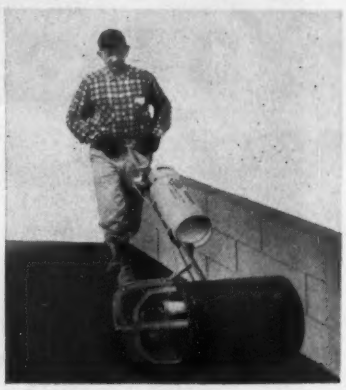


Wheel Dozer Is Handy for Small Jobs

All-wheel drive with controlled traction and planetary steering make the Detroit 44-35 tractor with dozer blade a handy rig for small leveling jobs where good maneuverability is important. The turning radius is 38 in.

Standard power plant is a 4-cyl, 49-hp Continental gasoline engine, but a diesel engine is also available. The transmission has four speeds in both forward and reverse. Maximum road speed is 17 mph.

Overall length of the rig is 124 in.; width is 72½ in. The complete unit weighs 5,830 lb, and the blade weighs 835 lb.—**Detroit Tractor Ltd., 1221 E. Keating Ave., Muskegon, Mich.**



Hot Roller

It weighs only 185 lb, but maximum compaction produced by this propane-fired roller is equal to that of a 5-ton tandem unit, according to the manufacturer. The Ellis Hot Roll Model P 1800 has an 18-in. wide roller equipped with a propane heater. One end of the roll is flat making the unit handy for finishing bituminous pavements flush against walls, posts, and other obstructions.—**Ellis Distributing Co., Box 168, Liberty, Mo.**

New rear dump hauls 15% more payload — *built entirely from USS "T-1" Steel.* This Athey PR 619 T-line trailer hauls 25 tons but weighs only 19,260 pounds. One man can move more tons of material, less fuel is consumed when running empty, and the machine has a faster cycle. The big improvement in performance starts with the use of USS "T-1" Steel *throughout.* This "strong boy" of metals cuts dead weight, substitutes 15% extra payload. Tougher, it defies relentless abuse, adds life. USS "T-1" Constructional Alloy Steel has a minimum yield strength of 100,000 psi. It is weldable and has high resistance to impact abrasion and corrosion. What's more, it retains its toughness at temperatures even down to 50 below zero. This combination of properties permits design for maximum weight savings coupled with ability to take abuse. In addition to "T-1" Steel, United States Steel makes other brands of steels for a wide variety of applications: USS COR-TEN, USS MAN-TEN and USS TRI-TEN with a 50,000 psi minimum yield point, in addition to a complete range of carbon and stainless steels.

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EQUIPMENT NEWS...
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Aggregate Batching Plant

Charging height of this portable aggregate plant is only 9 ft 2 in. making it suitable for charging with a front end loader. The hopper capacity is 6 cu yd, and there is a 12½-ft clearance for loading trucks.

A four-wheel mounting is standard for the Nomad batching plant, but a fifth-wheel plate is available for towing behind tractors. Either dial or beam-type scales can be installed.—**Engineered Equipment, Inc., Waterloo, Iowa.**

Disk Attachment Fits Cat Motor Graders

Any Caterpillar #12 or #14 motor grader with hydraulic power and operating valve can mount a Towner disk attachment. No changes are required to the grader, and the blade as well as the scarifier remain in position and are available for use at all times.

Two gangs of blades make up the MGD disk attachment. When not in use, the blades automatically close into an interlapped position as they are raised, reducing overhang to a minimum. When lowered into operating position by two hydraulic rams, the gangs automatically open to any preset angle from 0 to 60 deg.

Two types of atachments are available; both are 6½ ft wide. The MGD 22-28 consists of 22 disks with a 28-in. dia and spaced 6⅛ in. apart. This unit is designed for shaving and cutting old oiled surfaces and for mixing aggregate. The MGD 12-28 also has 28-in.-dia disks, but there are only 12 of them spaced at 12¼ in. This arrangement is suitable for aerating and mixing jobs.—**Towner Mfg. Co., Santa Ana, Cal.**

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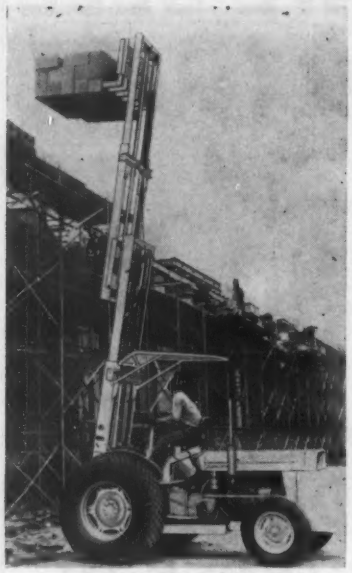
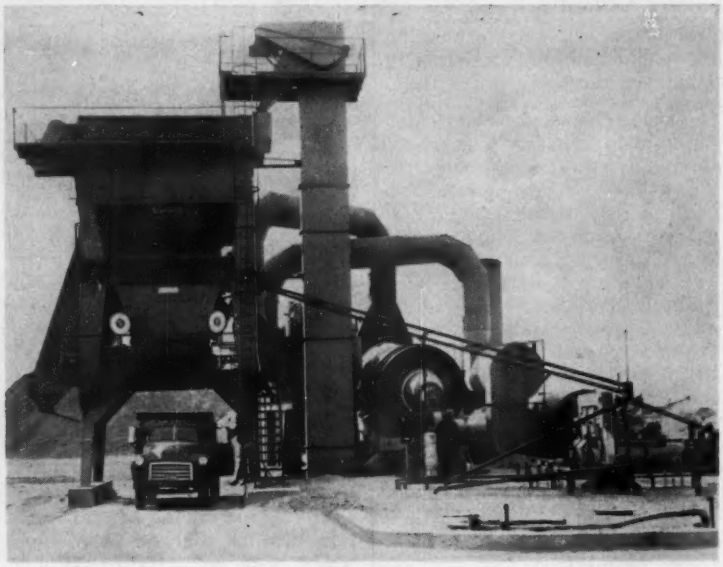


Handles Big Loads

The Massey-Ferguson 204 fork lift with a standard mast lifts 5,000 lb to a height of 10 ft, or 1,500 lb to 20 ft with a mast extension. Top travel speed is 17.8 mph in both forward and reverse. **—Massey-Ferguson, Block 1000 S. West St., Wichita, Kan.**



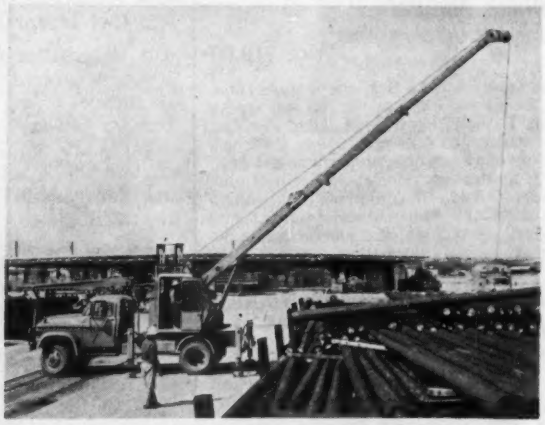
Asphalt Plant Produces 8,000-lb Batches

Biggest asphalt batch plant in their line has been introduced by Standard Steel. The Model R-M 8,000-lb batch capacity plant is equipped with a Super-lift dryer complete with its own gear-motor power supply.

Standard's cyclonic wet washing system is available for the plant. Another feature is a finger-tip batching control that simplifies the operator's job and insures good quality control.—**Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles 58, Calif.**

Ripper for TD-25

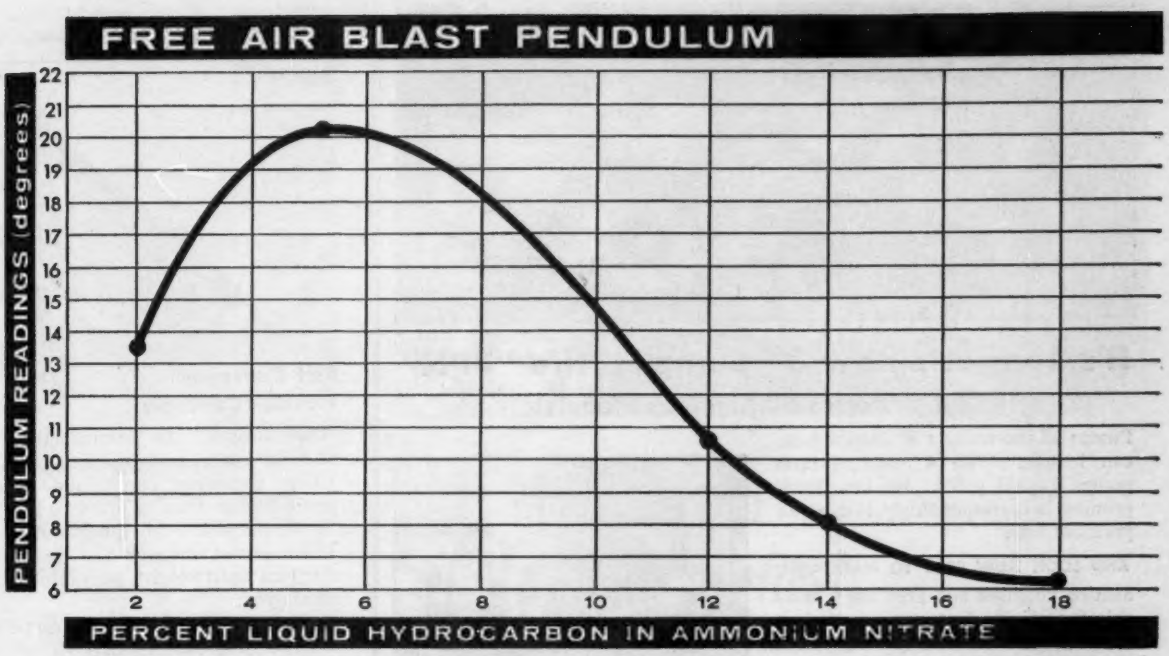
The Ateco HR48-TD25 rock ripper is designed for International TD-25 tractors. An offset tool beam provides enough clearance for installation on other tractors equipped with rear-mounted control winches. Maximum ripping depth is 48 in. with standard shanks, but pipeline or cable-laying shanks can be substituted when needed.—**American Tractor Eqpt. Corp., Oakland, Calif.**



Truck Crane With Telescoping Boom

Standard equipment on the Bucyrus-Erie truck-mounted H-3 Hydrocrane is a three-piece, hydraulically telescoping boom with a maximum reach of 35 ft. For extra high crane work this can be extended with 10 and 20-ft jibs. When working in cramped quarters or traveling over the highway, the boom length reduces to 15 ft 9 in., and the boom rests over the truck cab.

The 5-ton crane converts to an excavator with a variety of attachments. Four hydraulic outriggers and a dead-man safety control are also standard.—**Bucyrus-Erie Co., South Milwaukee, Wis.**



As this graph shows, blast output is closely related to the amount of fuel oil absorbed by the solid material. If it is too dense, too little fuel oil is absorbed and optimum blast energy cannot be released. Spencer N-IV has a special structure which allows it to absorb fuel oil more evenly and completely and release greater blast energy.

Why Spencer N-IV And Fuel Oil Deliver Greater Blast Output Than Higher Density Materials:

Because it soaks up fuel oil better, Spencer N-IV gives more blast energy than higher density, non-absorbent material

Do higher density materials really produce more blast energy? No, say blasting experts.

Actually, the opposite is true. When higher density material is used, the net result is really lower blast output. According to *Military Explosive*, published by the Department of the Army:

> **"The sensitivity of ammonium nitrate to initiation decreases with increase in loading density. If the density exceeds 0.9 charges of 1 to 3 pounds cannot be detonated completely by large booster charges, and larger quantities cannot be detonated completely at densities greater than 1.1."**

The reasons for this are clear. When a higher density, non-absorbent material is used, the outer layer of the particle is coated with too much fuel oil. This retards the efficiency of the explosion when the blast begins.

In addition, the inner layers of the higher density material don't get enough fuel oil. The mixture is too lean so that maximum blast energy cannot be released.

According to extensive research investigations, Spencer N-IV, when mixed with the recommended 6% fuel oil, delivers 20% to 25% more blast energy than equal charges of other solid ammonium nitrate-fuel oil mixtures. There are two main reasons for this:

1. Lower density which provides greater ease of detonation.

2. Special prill structure which allows fuel oil to be absorbed more evenly.

Many other prilled ammonium nitrates have coatings of diatomaceous earth. This coating tends to absorb more fuel oil on the outside of the particle. It reduces the distribution of oil within the particle.

Because Spencer N-IV has no diatomaceous earth coating, fuel oil can penetrate it more evenly. This results in a better fuel balance and much higher blast efficiency.

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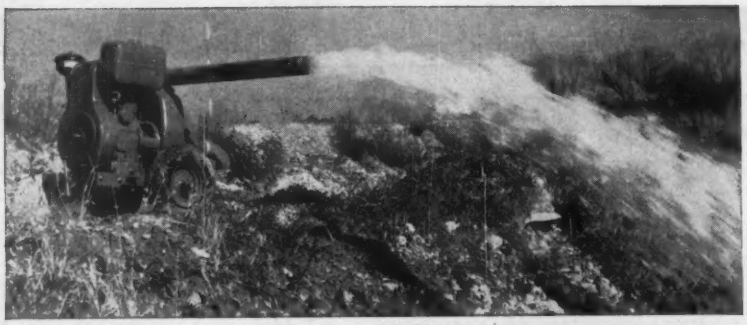
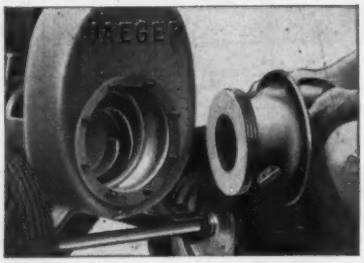


It's Jaeger's new 3" pump . . . the "3PN"

Out-performs all previous models

Pumps all the water a 3" suction hose can handle. With 4" suction hose pumps 28,000 gph at 10' lift. Sure-priming is correspondingly fast, at all practical lifts.



AND LOOK HOW EASY TO MAINTAIN!

Suction chamber and liner are removable for quick adjustment, rotation or replacement of liner plate. (New Model 3XPN offers same feature in a smaller pump.) See your Jaeger distributor or send for catalog.

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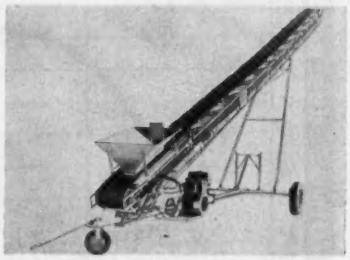


Belt Conveyor Handles Concrete

According to the manufacturer, the Morgen self-training idler roller conveyor can move concrete faster than a crane with a ¾-yd bucket. Also, labor and operating cost savings are claimed for this lightweight, portable belt conveyor.

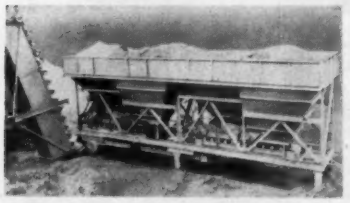
Hydraulic power drives the belt and permits continuously variable speeds up to 220 fpm. A patented two-roll idler assembly troughs the belt. Each roll is supported at both ends, and the idler rollers never need adjustment. Available lengths for portable conveyors are 32, 40, and 48 ft. Maximum length for a semi-portable unit is 56 ft. **—Morgen Mfg. Co., Yankton, S.D.**

Brick Buggy

The model 51 Half Brick Buggy is equipped with a pair of adjustable forks that are inserted through the voids in blocks to carry cubes of block. A handle at the back of the backstop panel operates the forks. The manually operated buggy fits through 30-in.-wide doors.—**West Brick Buggy Corp., 4310 Mayfield Rd., Cleveland 21, Ohio.**

Vibratory Compactor

The Muller-Masher develops a compacting force equal to that of a 10-ton roller, according to the manufacturer. The vibratory unit can be moved at speeds of 50 to 75 fpm when compacting. Tamping pads are available in 12, 18 and 24-in. widths.—**Muller Machinery Co., Inc., Metuchen, N.J.**

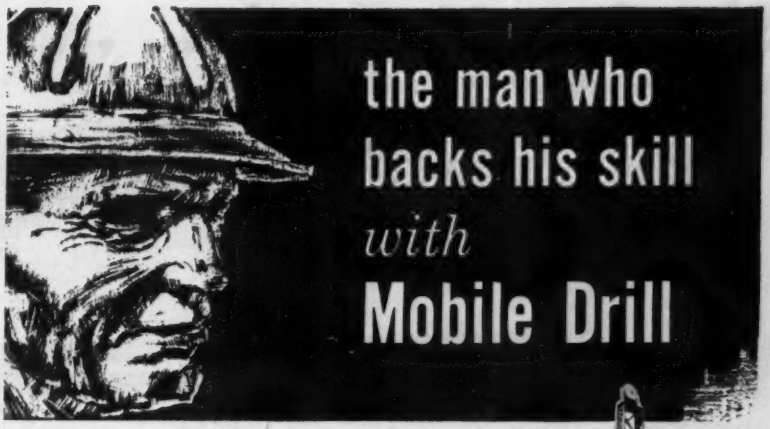


Charging Hopper Feeds Asphalt Plants

Three or four sizes of aggregate for asphalt plants can be fed simultaneously from hoppers that contain 5 cu yd each. Adding 2-ft-high extensions to the sides of the compartments increases their capacity to 10 cu yd each. Without the side extensions, this Cedarapids charging hopper and feeder unit is designated the model 405, with the side extensions it becomes the model 410.

All gates feature quick-acting lever mechanisms that raise the gates to remove obstructions and automatically reset them to a predetermined opening. Two 24-in. belt feeders service two compartments each and convey materials to a 30-in.-wide, trough-type gathering conveyor. It delivers the materials beyond the frame to a cold elevator or a feed conveyor.

The unit is available with or without running gear. It can be powered either by an electric motor or a gasoline engine.—**Iowa Mfg. Co., Cedar Rapids, Iowa.**



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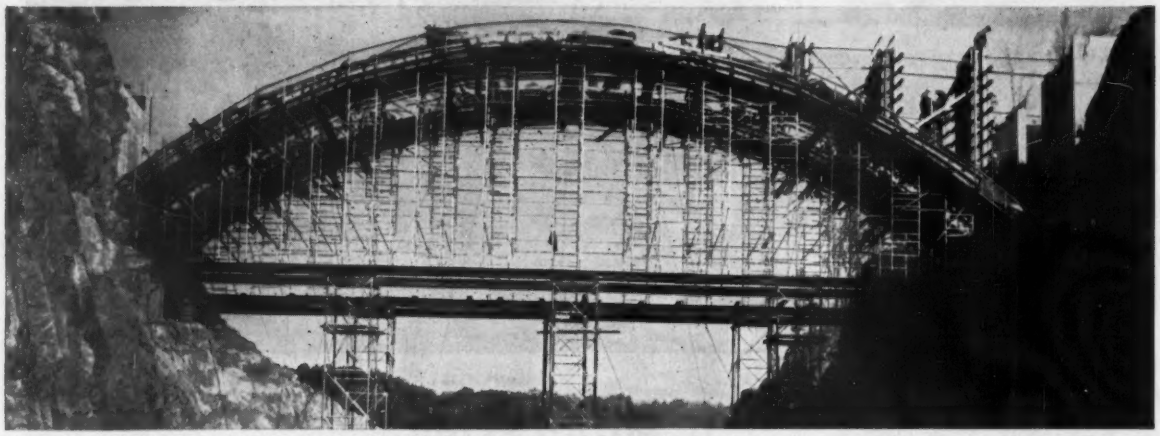
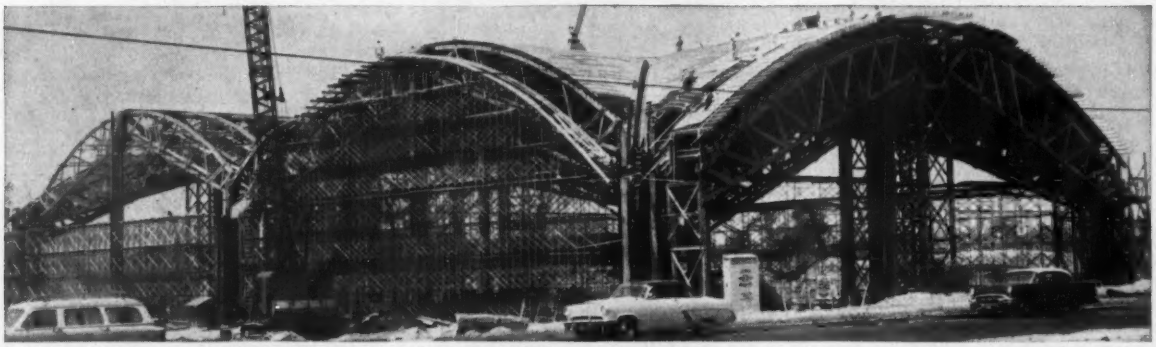
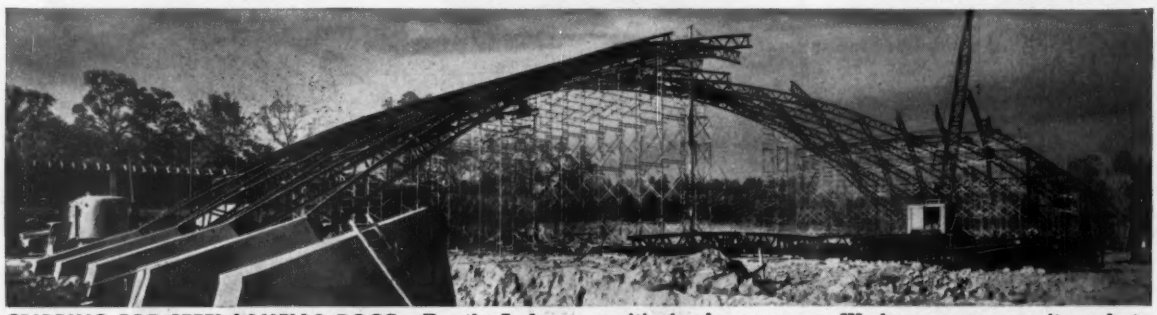


TWO-UP SHORING FOR HEAVY BRIDGE—For the new, 143'-long concrete bridge at Hogback Dam, Riverton, Conn., PS CO. Extra Heavy Duty Shoring is first assembled in 6 towers, 48'-high to carry a total load of 32,000 lbs. per leg. I-beams are set on top. Then "Trouble Saver"® 4'-wide Heavy Duty Shoring frames are arranged atop the I-beams. Frames support 9,000 lbs. per leg, imposed by columns and two ribbon arches 8'-wide by 1½' to 3'-thick, 34' center height. White Oak Excavators, contractor.



LONG, HIGH, EDGE-BEAM SUPPORT—Shoring of long, concrete edge-beams, 22'-wide by 4'-thick, varying from 140' long by 70' high to 150' long by 75' high, is easily accomplished with standard "Trouble Saver"® Sectional Steel Shoring. Frames of various heights are used to match the curve of the beams. Gilbane Building Company, contractor, for the first fully mechanical Post Office, Providence, R.I. Building is to be 420' by 300'.



CRIBBING FOR STEEL LAMELLA ROOF—For the Ladue H.S. Auditorium, "Trouble Saver"® Steel Shoring is rapidly assembled in towers to form temporary cribbing during erection of steel girders of the lamella-type roof. Shoring towers, with frames spaced 5' apart, are placed to hold girders during positioning by one crane. Workers secure opposite ends to adjoining members already placed. Steel arches are 252'-long, abutment to abutment, center height 50'. Christina Constr. Co., gen. contr., Kroeger Erection Co., steel erectors.

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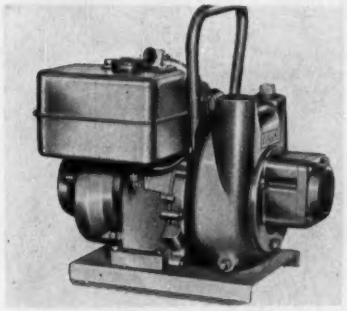

Utility Pumps

Myers self-priming utility pumps are powered by aluminum engines to reduce the weight for easier portability. A specially designed, nonclogging impeller permits the pumping of water with a high percentage of solids, according to the manufacturer. The suction plate is removable for easy inspection and cleaning of the impeller, and the impeller can be replaced without removing the pump case.

The M-5 pump has a ½-in. suction and pumps 5,000 gph; the M-7 handles 7,000 gph and has a 2-in. suction.—**The F. E. Myers & Bro. Co., Ashland, Ohio.**

Cold Aggregate Feeder

Combining two or more Barber-Greene 817 aggregate feeders can match their capacity to that of the asphalt plant being served. Each basic unit has a capacity of 8 tons, but bin extensions can be added in 2, 4 and 6-ft increments, increasing the capacity at the rate of 4 tons per each ft of bin extension. Maximum capacity per bin is 32 tons.

Belt feeders discharge the material from each bin to a gathering conveyor. Standard belt widths are 18-in. for the discharge belts and 24-in. for the conveyor. Optional widths are 24-in. and 30-in. respectively.

Each feeder can be powered by an individual gear motor drive or by an interlocked lineshaft drive from a single gasoline engine. Three bins can be combined on a single-axle portable chassis.—**Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.**

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FOR *Quick, Pressure-Proof Connections* ON AIR HOSE AND COMPRESSORS . . .

"Air King" Quick-Acting, Universal Type Coupling. Built on plain, rugged lines to assure long trouble-free service under all conditions. Locking heads identical for all sizes of hose or threaded ends within the "Air King" size range. To connect, press together and apply quarter-turn. Reverse to disconnect. Equipped with auxiliary locking device for added safety. Regularly furnished in bronze or rust-proofed malleable iron, but also available in special metals.

Made in Hose Ends and Male and Female I. P. T. Ends, in sizes up to 1".

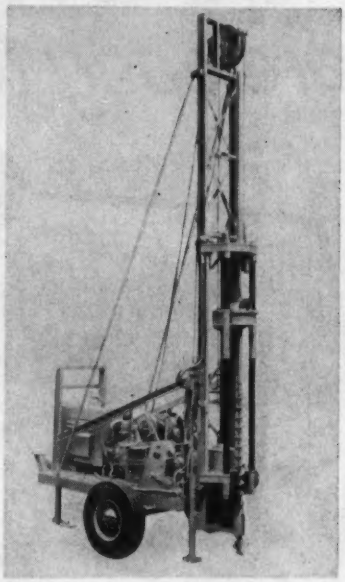
FOUR-LUG STYLE

Same as above in locking action, but for larger hose sizes. Hose ends and I. P. T. Ends in sizes 1¼", 1½" and 2".

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

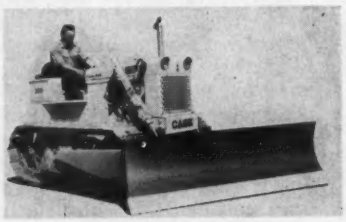
DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO Associate Companies

EQUIPMENT NEWS... *continued*



Counting Device on Drill Records Blows per Ft

Incorporation of an automatic counting device on the Model "B" Testborer makes it possible to record the actual number of blows of the automatic driver on the sampler. In the past, accurate record keeping depended solely upon the driller's ability to keep a mental record of the blows on the sampler. The new automatic counter eliminates the possibility for human error.—**Penndrill Mfg. Div., Pennsylvania Drilling Co., 1201-1215 Chartiers Ave., Pittsburgh 20, Pa.**



Adjustable Dozer Blades

Hydraulically powered angling and tilting dozer blades now can be mounted on the Case 310 utility crawler tractor. Either blade can be adjusted on-the-go from the tractor seat.

The Power-Angling blade can be set at 25 deg to either the left or right. On the hydraulic tilt dozer, the blade can be tilted so that either corner is 11 in. below grade. — **J. I. Case Co., Racine, Wis.**

LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.

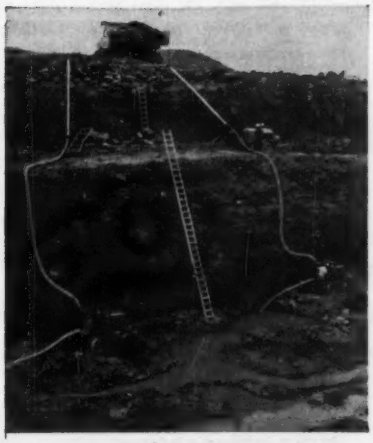
"NEITHER RAIN NOR SNOW NOR DARK OF NIGHT...."

But often forgetting the postal zone number when you address an envelope can delay your letter long enough to miss the appointed round. There are 106 cities in America where a complete address includes a zone number. Always use it when writing to or from these cities.

The **HEART** *of any solution to seepage water*
IS THE PUMP ON THE JOB!

Marlows WORK NIGHT AND DAY

Keep monster trench workably dry!



These engine-driven Marlow self-priming pumps operate on a 24-hour schedule to control seepage water.

The giant Niagara Power Project called for the construction of a $141,000,000, four-mile-long conduit waterways system. Trenches were dug in four separate sections to accommodate huge 46 foot by 66 foot concrete conduits. They will carry water from the upper Niagara north to the Tuscarora Pumping and Generating Plant.

When seepage water became a serious problem on one section, Merritt-Chapman & Scott Corporation installed big Marlow self-priming pumps to keep the area workable. On another section of the project, Gull Contracting Company and L. G. Defelice and Sons, Inc. used Marlow self-primers in the trenches. Operated to carry water over a 75-foot embankment, these pumps handled 90,000 GPH on continuous service.

In addition to a complete line of AGC rated pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump. For full information, write today for Bulletin C-09 and the name of your Marlow dealer.

Marlow PUMPS®

MARLOW PUMPS
DIVISION OF BELL & GOSSETT COMPANY
MIDLAND PARK, NEW JERSEY
Morton Grove, Illinois • Longview, Texas

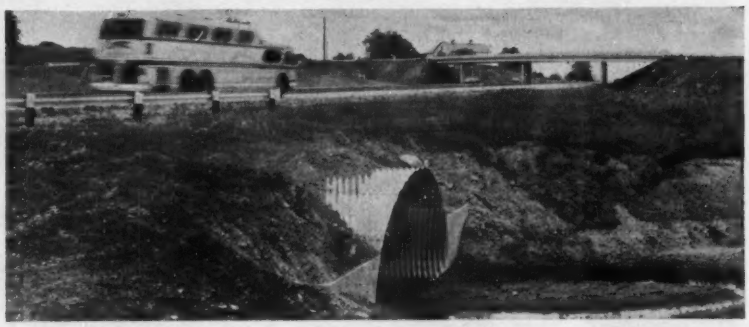
G-479

In 40 States, Contractors Have Installed Armco Corrugated Metal Drainage Structures Under 138 New Limited-Access Highways

New steels are born at Armco

Armco Corrugated Metal Drainage Structures meet all requirements of modern superhighways, just as they have been doing for highways and roads all over the country for the past 50 years. Armco Drainage Structures are economical and easy to install, too.

For information on these highway drainage products, just write Armco Drainage & Metal Products, Inc., 4310 Curtis Street, Middletown, Ohio.



ALABAMA
Interstate 20 (Birmingham to Pell City)
Interstate 59 (Fort Payne to Georgia State Line)
Interstate 65 (Atmore to Evergreen)

ARKANSAS
Interstate 40
Interstate 55

CALIFORNIA
Golden State Freeway (Los Angeles to Bakersfield)
Interstate 5 (San Francisco to Reno)
Interstate 15 (Los Angeles to Las Vegas)
Interstate 80 (San Francisco to Reno)
Nimitz Freeway (Oakland to San Jose)
San Bernardino Freeway (Los Angeles to San Bernardino)
San Diego Freeway (Los Angeles to San Diego)
U. S. 50 (Oakland to Carson City)
U. S. 101 (Los Angeles to San Francisco)

COLORADO
Denver-Boulder Turnpike
Interstate 25 (Pueblo to Denver; Denver North; Trinidad)
Interstate 70 (Idaho Springs)
Interstate 80S (Fort Morgan-Brush; Denver to Barr Lake)
Valley Highway (Denver)

CONNECTICUT
Connecticut Turnpike (Interstate 95)
Interstate 84 (New York-Conn. Line in Danbury. East to Hartford)
Interstate 91 (Hartford to Mass. Line at Longmeadow)

FLORIDA
Sunshine State Parkway

GEORGIA
Interstate 75 (Adel to Ashburn)
Interstate 85 (Fulton County)
U. S. 41 (Atlanta to Cartersville; Atlanta to Griffin)

IDAHO
Interstate 15 (Monida to Humphrey; Hamer to Roberts; Blackfoot to Pocatello)
Interstate 80N (American Falls to Pocatello; Mountain Home to Boise; Payette to Caldwell)

ILLINOIS
Congress Expressway (Interstate 90)
Edens Expressway (Interstate 94)
Illinois Toll Road
Interstate 55
Interstate 57
Interstate 80
Interstate 255 & 270
Northwest Expressway & Calumet Skyway (Interstate 94)
Tri-State Toll Road (Interstate 294)

INDIANA
Indiana Toll Road (Interstate 80 and 90)
Interstate 65
Interstate 70
Interstate 74
Interstate 465
Tri-State Highway (Interstate 94)

IOWA
Interstate 29
Interstate 35
Interstate 80 (Davenport to Council Bluffs)

KANSAS
Kansas Turnpike (Interstate 35; Interstate 70 Kansas City to Topeka)
Muncie Expressway (Interstate 70, Kansas City)
U. S. 50 (Turkey Creek)

KENTUCKY
Interstate 75 (Covington)

MAINE
Interstate 95 (Portland to Brunswick)

MASSACHUSETTS
Interstate 91 (Conn.-Mass. Line North through Longmeadow-Springfield to Vermont Line)
Interstate 93 (Boston to N. H. Line via Woburn-Andover-Methuen)
Massachusetts Turnpike (Interstate 90)

MICHIGAN
Interstate 75
Interstate 94
Interstate 96

MINNESOTA
Interstate 35 (Mission Creek to Sandstone)
Interstate 35W (Owatonna, north)
Interstate 90 (Austin to Dexter; So. Dakota Line to Beaver Creek)
Interstate 94 (Moorhead, north)
Minneapolis Freeway (Interstate 35W & 694)
St. Paul Freeway (Interstate 35E & 494)

MISSOURI
Interstate 3 (Kansas City, north)
Interstate 35

MONTANA
Interstate 15 (Cascade to Ulm)
Interstate 90 (Tarkio; Drummond; Springdale; Glendive East)
Interstate 94 (Crow Agency to Hardin)

NEBRASKA
Interstate 80 (Omaha to Lincoln)

NEVADA
Interstate 15 (Los Angeles to Las Vegas)
Interstate 80 (Sacramento to Reno)
U. S. 50

NEW HAMPSHIRE
Interstate 89 (Bow-Concord to Lebanon)
Interstate 93 (Franconia-Littleton)

NEW JERSEY
Garden State Parkway (Cape May to Spring Valley)
New Jersey Turnpike (Ridgefield Park to Deepwater)

NEW MEXICO
Interstate 10 (Lordsburg to West Arizona Line)
Interstate 25 (Las Cruces to Radium Springs; Socorro to Belen; Las Vegas, north; Glorieta, north and south)
Interstate 40 (Gallup, west; Ft. Wingate to Thoreau; Grants to San Fidel; Laguna to Correo; Albuquerque, etc.; Moriarity to Clines Corner; Guadalupe County Line to Santa Rosa)

NEW YORK
Cross Westchester Expressway (Interstate 487)
Empire Stateway (Interstate 81, Binghamton to Ogdensburg)
Heckscher State Parkway
Long Island Expressway (Interstate 78, Queens only)
New York State Northway (Interstate 87, Albany to Plattsburgh)
New York State Thruway and Extensions (Interstate 90, Pa. to Mass.; Interstate 87, Selkirk to New York City)
Palisades Interstate Parkway
Sunrise Highway (State Route 25)
Taconic State Parkway (New York City to Albany)
Throggs Neck Bridge(Interstate 78)

NORTH CAROLINA
Interstate 95 (Fayetteville to Dunn)
U. S. 1 (Sanford to Raleigh)
U. S. 29 (Greenville to Gastonia)
U. S. 70 (Salisbury to Raleigh)

NORTH DAKOTA
Interstate 29
Interstate 94

OHIO
Interstate 70 (Springfield to Englewood)
Interstate 71
Interstate 75 (Dayton to Piqua; Wapak to Findlay)
Interstate 90

OKLAHOMA
Interstate 35
Interstate 40
Interstate 44
U. S. 69

OREGON
Interstate 30 (Banfield Expressway; Columbia River Highway)
Interstate 99 (Baldock Freeway)
Sunset Highway (Portland, west)

PENNSYLVANIA
Interstate 70S (Washington to Pennsylvania Turnpike)
Interstate 83 (New Cumberland to Maryland line)
Pennsylvania Turnpike (Interstate 80S to Valley Forge)
Schuylkill Expressway (Interstate 80S)

SOUTH CAROLINA
U. S. 29 (Greenville to Gastonia)

SOUTH DAKOTA
Interstate 90 (Black Hawk to Rapid City)
Interstate 93 (Sioux Falls to Iowa State Line)
Interstate 95 (Sioux Falls Bypass)

TEXAS
Interstate 10
Interstate 20
Interstate 35
Interstate 45

UTAH
Interstate 15 (Beaver to Paragonah; Harrisburg Bench; St. George, north; Levan to Scipio)
Interstate 70 (Cat Canyon to Emery Gy Line)
Interstate 80 (W. Tremonton to Bl. Creek; Henefer to Echo, Parley's Canyon)
U. S. 40 (Heber to Silver Creek Junction)
U. S. 89 (Mt. Pleasant to Manti; Hatch, south; Kanab to Glen Canyon)
U. S. 160 (Moab, north)

VERMONT
Interstate 91 (Mass. Vt. Line North through Guilford-Brattleboro-Dummerston-Putney)
Interstate (White River Jt. to Montpelier-Burlington-St. Albans)

WASHINGTON
Interstate 10 (Renton and Shore Cutoff; Seattle-Spokane-Coeur d'Alene)
Interstate 99 (Olympia Bypass; Vancouver to Olympia; Tacoma-Everett Freeway; Vancouver Bypass; Auburn-Echo Lake Bypass)

WEST VIRGINIA
Interstate 64
Interstate 77

WISCONSIN
Janesville Bypass
Interstate 90
Interstate 94
Interstate 894 (Bypass around Milwaukee)
Milwaukee County Expressway

WYOMING
Interstate 25 (Cheyenne to Casper)
Interstate 80 (Rawlings to Evanston)
Interstate 90 (Buffalo to Newcastle)

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

Low-Vibration Paving Breakers

Atlas Copco has introduced two models of paving breakers that deliver maximum power at a minimum air input. Standard hexagon shanks are either 1⅛ or 1¼ by 6 in. Other tools include moil points, narrow and wide chisels, digging blades, frost wedges, and clay spades. The larger of the two models can be converted for use as a sheeting driver.

The E-20 model weighs 47 lb and has a piston diameter of 1⅝ in. with a stroke of 3 15/16 in. Its overall length, including a foot-operated, latch-type retainer, is 24½ in. The larger E-40 weighs 70 lb, has a 2½-in. piston diameter, a 5¼-in. stroke, and an overall length of 27½ in. A ½-in. hose supplies air to the E-20 while the E-40 is fitted with a ¾-in. coupling.

Lubricators are built into the breaker's handle and hold enough oil to lubricate all moving parts, including the chisel shanks, for a full 8-hr shift. Oil is injected into the breakers each time they are started. — **Atlas Copco, 545 Fifth Ave., New York 17, N. Y.**

Two Air-Powered Crawler Drills

Drifters for two Le Roi Trac-Newmatic drills are available in 4 and 5-in sizes. The 5-in. drifter handles 4-in. holes while the 4-in. drifter takes care of 2½ and 3-in. drilling requirements. Both drills have forward, neutral, and reverse rotation for easier drilling.

The feed support arm swings over the crawlers from the center line to 60 deg left or 45 deg right. Breast holes can be drilled to a height of 10½ ft. An optional dust collecting system carries the dust away from the operator and the drill.

Reversible, 7½-hp motors drive the crawler assemblies. The drill rig can climb a 10% grade at 2 mph with a Le Roi 600-cfm compressor in tow. A hydraulic pump, driven by an air motor, controls all operating functions of the feed and support arm.—**Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.**

Small Crawler Tractor

Latest models of Mead Speedcat crawler-mounted loaders feature an all-welded main frame and an electric starting system as standard equipment. A three-tooth, hydraulically operated scarifier attachment is optional.—**Mead Specialties Co., Tractor Div., TR-286, 4114 N. Knox Ave., Chicago 41, Ill.**

INSTANT LATERAL DIGGING WHEEL SHIFT LICKS TIGHT-QUARTERS TRENCHING JOB

THE CLEVELAND JS-30 TRENCHER, with instant lateral shifting and power tilting of its digging wheel, got high daily trench production for McShane Contracting Co. of Pittsburgh on a water line job that would have slowed an ordinary trencher to a snail's pace. The trench had to be dug in an extremely narrow road shoulder hemmed in by poles, trees and heavy growth on side slopes rising sharply within less than six feet of the pavement's edge.

Able to dig behind either crawler or anywhere within its 6-foot width, the JS-30 easily dug past the obstructions in the narrow shoulder. Lateral position of the crawlers was changed as necessary to get by obstructions, while the JS-30's digging wheel was power-shifted laterally, keeping trench digging right on line. Power-tilting of its digging wheel allowed the JS-30 to dig straight vertical trench with one track higher than the other on the side slopes, without blocking or cribbing.

THE JS-30—A TRENCHER OF AMAZING UTILITY

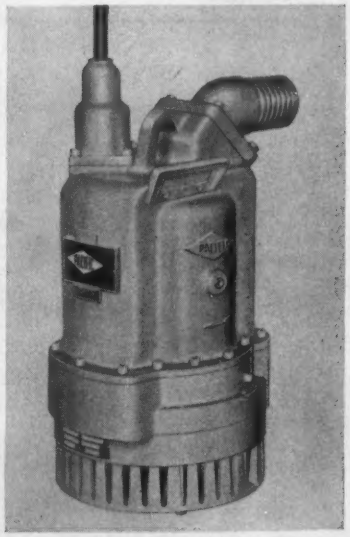
- Digging wheel power-shifts 5' from side to side
- Digs trench flush with parallel pavement, curbs, etc.
- Digs trench virtually flush with trees, poles, fences, etc.
- Digs vertical trench on side slopes, cuts blocking, cribbing
- Excavates bell holes, saves on trench width
- Digs 11"-24" wide, to 5½' deep; digs to 6' wide with power-shifting of wheel
- 100% control of all operations at operator seat.

Get the complete story on the JS-30 from your distributor

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

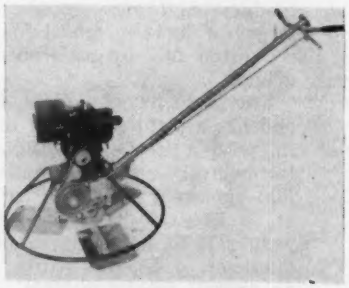
Good Everywhere ®



Submersible Pump Resists Corrosion

Salty or contaminated water has no effect on this submersible pump because its casing is made of a special corrosion-resistant alloy. The impeller is made of a tough material to resist abrasion, and the pump case is rubber lined.

Pacific's type SA pump is self-priming and will operate under flood conditions or will pump effectively at only 5% of its capacity. The pump discharge passes along the side of the motor and cools the insulated windings. Motor ball bearings are lifetime lubricated.—**Pacific Pumping Co., P. O. Box 44, Oakland, Calif.**



Powerful Troweling Machine

The Champion 290-G power trowel is driven by a 3-hp Briggs & Stratton engine. The unit is equipped with a 29-in.-dia guard ring and three combination float-finish trowel blades. Steel bars can be added for extra weight if necessary, or the unit can be adapted for use with grinding stones.—**Champion Mfg. Co., 3700 Forest Park Ave., St. Louis 8, Mo.**

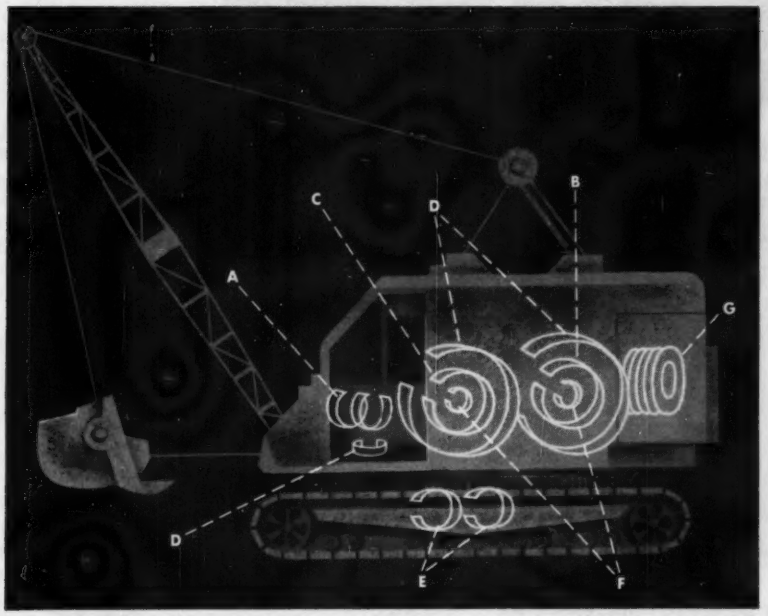
J-M Friction Material Technical Bulletin #110:

How to pick friction materials to get best performance from Drag Lines

A recent industry survey shows that 25% of the average contractor's bid price represents the cost of equipment maintenance.

Here's an obvious area of opportunity for you to convert costs into profits through good maintenance practices. And since improper friction materials cause over half the premature failures in relined brakes and clutches—picking the right lining or facing should be the basic requirement of any maintenance plan.

As shown in the accompanying diagram of drag line shovel requirements, it is the mechanism's work load that determines the characteristics of the controlling friction.



Recommended J-M Friction Materials for Drag Lines

A. Swing Friction—subject to extreme wear and high torque.—J-M 150 for high energy absorption, good rate of wear and non-fade characteristics.

B. Hoist Friction—receives heavy wear. Extreme loads require easy engagement and positive, non-slip holding —J-M 140 for excellent wear characteristics and non-fading friction.

C. Drag Friction—subject to high impact and variable loading—J-M 150 for high friction, and excellent frictional stability over wide temperature range.

D. Swing Brakes, Hoist Brakes, Drag Brakes—swing and hoist brakes are exposed to sudden shock loads while drag brakes receive intermittent loading.

—J-M 600 for easy seating, long wear and excellent holding characteristics.

E. Travel Brakes—most units require exceptionally long lining with good holding power.—J-M 300 or 600 Woven Roll Stock for ease of application.

F. Boosters—utilized on most equipment to assist mechanisms exposed to extreme loading or high torque conditions. Usually found next to mechanism they assist, boosters require a friction material that is fast seating and gives positive engagement.

—J-M 300 and 600 Woven Roll Stock for ease of application and size variety.

G. Engine Clutch—exposed to intermittent high torque, sudden shock loads and heat surge.

—J-M 140 for its ability to quickly dissipate heat and withstand shock loads, and its high friction stability.

For example—for the swing friction which controls the momentum of the heavy cab and boom—you need a special material like J-M 150 to absorb the high torque effect. The engine clutch, on the other hand, receives sudden high rpm loadings, and requires a material like J-M 140 to withstand extreme thermal exposure.

To meet modern equipment requirements such as these, Johns-Manville Asbestos Frictions are supplied in two different primary classifications—molded and woven —with numerous style variations in each. The Molded Asbestos styles resist thermal breakdown and withstand heavy shock loads which tend to crush or shear materials. The Woven Asbestos styles—with easy adaptability and quick wear-in—have exceptional non-scoring properties and mechanical strength. All assure more service hours per dollar invested.

For expert counsel and advice on your friction needs, call on your nearby J-M Friction Materials Specialist. And for your own FREE copy of the J-M Industrial Friction Materials book—a comprehensive listing of types, styles and recommendations—write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario. Ask for FM-35A.

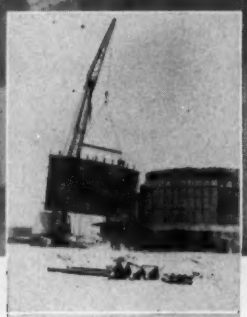
Molded J-M Facing Segments being riveted to a swing friction member.

JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

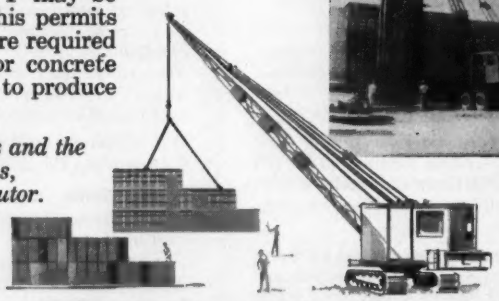
AIRBORNE UNI-FORM PANELS

smart way to speed concrete forming...



Forming speed and economy can be greatly increased by crane handling big monoliths of UNI-FORM Panels. Contractors with repetitive section forming requirements are finding that the design of UNI-FORM Panel monoliths—in which metal filler angles are used between each panel—give them greater versatility and wider application. For example . . . tie rods of any size from ½" to 1" may be used to tie two monoliths into a wall form. This permits using the right tie size for the job. Fewer ties are required and sections can be placed, tied and ready for concrete faster. Panels may be added or removed at will to produce any monolith required.

For complete information on UNI-FORM Panels and the UNI-FORM System in crane handling operations, write today, or ask your nearby Universal Distributor.



"Products from the Gold Tool Room"

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:

ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

COUPLED DRILL STEELS — An 8-p brochure details the proper operational and maintenance procedures for using coupled rock drill steels. Drilling Rock With Coupled Steels (Bulletin 10815) discusses and illustrates correct rotation; drill, feed, and dust control; proper lubrication; and how to start a hole, and add and remove steels.—**Thor Power Tool Co., 175 N. State St., Aurora, Ill.**

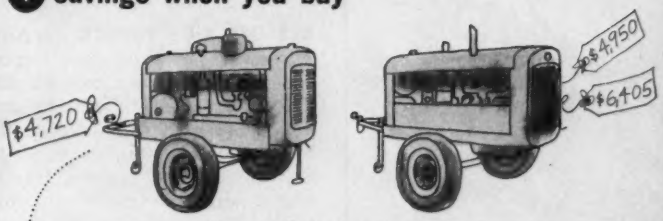
SMALL TRENCHER—The Cleveland Model 92 Baby Digger, a compact unit designed for city and suburban work, is described in a 12-p folder. The Model 92 digs a trench 10 to 20 in. wide to a depth of 5 ft, and it can put the edge of the trench within 17 in. of a parallel obstruction. Bulletin L-108 contains complete specifications, design illustrations, and photographs of the trencher in action. — **Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio.**

ARBA DIRECTORY—The names and addresses of administrative engineers and officials in the 50 state highway departments, plus the District of Columbia and Puerto Rico, are listed in the 1960 edition of the American Road Builders Assn. pocket-sized directory entitled Highway Officials and Engineers. The directory, available at $1 per copy, also lists administrative personnel of toll authorities and the Bureau of Public Roads.—**American Road Builders' Assn., World Center Bldg., Washington 6, D.C.**

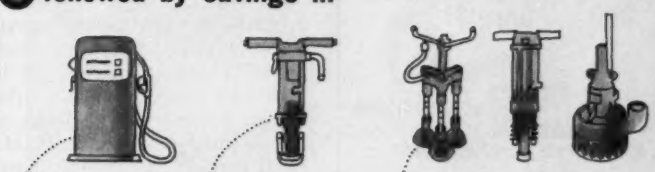
CONCRETE ACCESSORIES — Superior's complete line of accessories for concrete construction is listed in 60-p Catalog 700. It covers form ties, clamps, anchors, hangers, shores, jacks, and accessories for reinforcing steel. Where load considerations are important, the products are rated as to safe working loads and/or ultimate capacities. The catalog includes a 3-p insert that provides tables of concrete pressures in the forms at

WHY SHOULDN'T YOU POCKET THESE SCHRAMM COMPRESSOR SAVINGS TOO!

1 savings when you buy



2 followed by savings in

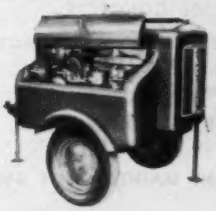


3 plus maintenance savings on

IT'S AS SIMPLE AS THIS:

Schramm piston-type design cuts manufacturing costs; permits rugged, power-packed compressors that deliver full rated air capacity at rock-bottom initial cost. With today's cost squeeze, no contractor can afford to shell out when he buys a compressor . . . or during all the years that he uses it.

Write for bulletin. Or see your nearest Schramm dealer listed in the Yellow Pages.



Schramm AIR COMPRESSORS

604 North Garfield Ave., West Chester, Pa.

Schramm, Inc., manufacturers of Rotadrills (Pneumatractor Mounted, Truck Mounted, Crawler Mounted), Air Compressors (Portable, Stationary), Self-propelled Air Compressors (Pneumatractors) and Booster Compressors

LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.

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NEW PUBLICATIONS . . .
continued

summer and winter temperatures and recommends safe spacing of studs, wales, and form ties according to sizes of form lumber used. **—Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.**

BITUMINOUS PAVER — Automatic features of the Express Paver Series 3 are covered in a descriptive sheet. The redesigned paver has a control console that hydraulically actuates a 10-ton capacity folding hopper, traction clutch, and other standard equipment. The paver lays hot or cold asphaltic material 8 to 16 ft wide and up to 10 in. deep. The sheet includes complete specifications. **—Blaw-Knox Co., Construction Equipment Div., Mattoon, Ill.**

JACKS—A 16-p booklet provides complete specifications and ordering details for Simplex ratchet-lowering, trip, journal, bridge, screw, push-and-pull jacks, and special purpose equipment and accessories. Write for Mechanical Catalog No. 60.**—Templeton, Kenly & Co., Gardner Rd., Broadview, Ill.**

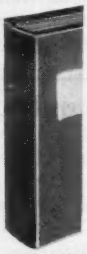
CONCRETE VIBRATORS — All models of Dart's concrete vibrators are described in a new folder. Sheet J-320 includes information on gasoline models, electric 60-cycle models, high cycle motor-in-head models and pneumatic models. The folder, along with Sheet J-437, also covers the Viking V3 concrete finisher-float that can be converted readily to a grinder.**—Dart Mfg. Co., 1002 So. Jason St., Denver 23, Colo.**

DUMP TRUCK HOISTS—Folder HB-6002 describes Daybrook's telescopic and underbody hydraulic hoists. Included is a load rating chart that tells how much each hoist will lift according to the length of the truck body. Telescopic hoists are featured for tandem and single-axle trucks, trailers, and trains; and underbody hoists for medium, heavy, and extra heavy duty work.**—Daybrook Hydraulic Div., Young Spring & Wire Corp., Bowling Green, Ohio.**

SHORING FRAMES — Patent Scaffolding features its new 20K heavy duty shoring frames in Bulletin PSS-51. The frames are ca-

ESTIMATING STRUCTURAL STEEL

This practical guide brings you best methods for compiling accurate estimates of the final cost of bridges, buildings, and other types of steel construction. Describes all the equipment and material required in any structural frame and fully covers costs of fabrication and erection. Numerous diagrams show trusses, connections, sections, and other details, and many photographs illustrate equipment and typical structures. **By George A. Saunders, Estimating Consultant. Lehigh Structural Steel Co. 274 pp., 176 illus., $9.50**

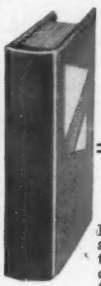


HANDBOOK OF HEAVY CONSTRUCTION

This master guidebook gives you tested methods—data on such vital factors as equipment costs and output — valuable checklists — and other essential information on every phase of construction. This time- and work-saving help is placed at your command by 36 top experts. They guide you in solving a wide range of construction problems involving costs, materials, procedures, equipment, schedules, controls, and operations. **Edited by Frank W. Stubbs, Jr., Purdue Univ. Prepared by a Staff of Specialists. 1040 pp., over 600 illus., $18.50**

BUILDING CONSTRUCTION HANDBOOK

Covers every aspect of building design, materials, and construction. Offers basic information on stresses; soil mechanics and foundations; concrete, timber, and steel construction; acoustics; insulating; heating and air conditioning; plumbing; estimating costs; specifications; surveying; elevators; insurance; water supply; masonry; etc. **Edited by Frederick S. Merritt, Senior Editor, Engineering News-Record. 851 pp., 428 illus., $15.00**



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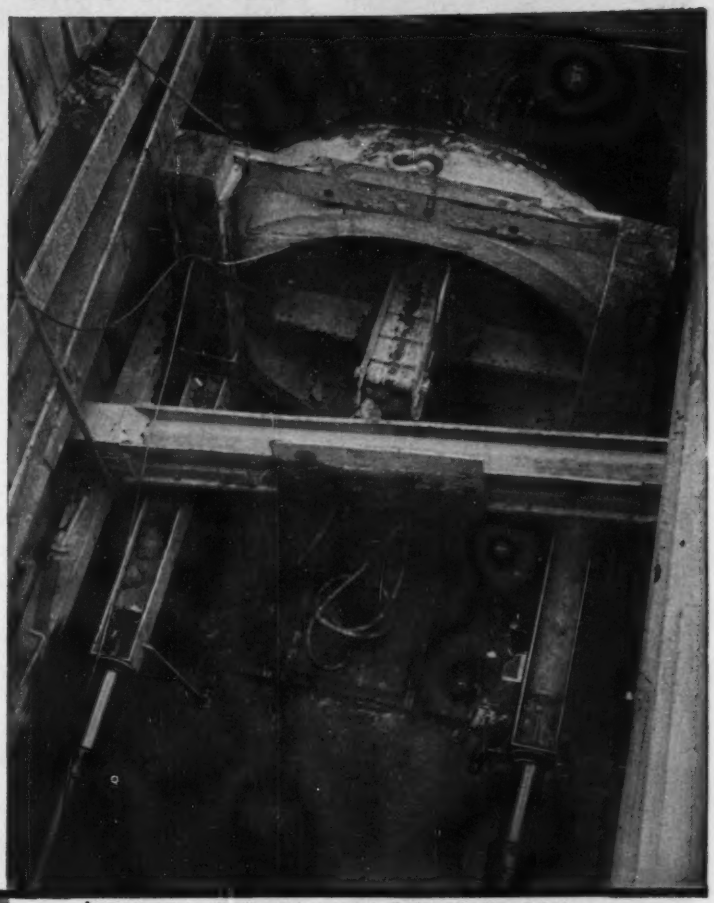
MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96″ I. D. reinforced concrete tile 88′ under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48″ ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

JACKING PROCEDURE—A service pit 28′ deep by 22′ wide by 40′ long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48″ ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

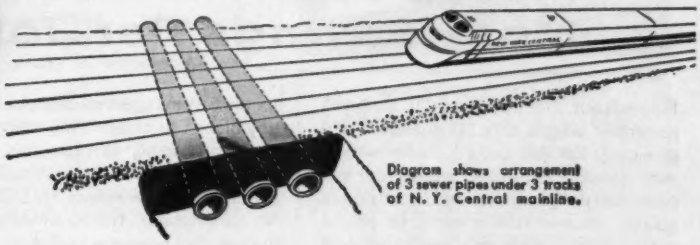


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

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Figure it out. The new Homelite Model 8A generator weighs only 143 pounds. Yet it gives you full 3000 watts . . . with voltage automatically controlled within four per cent from no load to full load. That's more steady, dependable power per pound than any other carryable generator. And when it comes to money, you get more savings per job with this power house . . . savings in transportation, labor and maintenance. A man can quickly put it to work any place . . . close to the many electric tools and floodlights it operates. No long, power-hungry cables to dull tools or dim lights. No troublemakers. No DC brushes. No commutator. No DC windings on armature. Two types are available . . . 115 volt and 115/230 volt, both 60 cycle, AC. Write for convincing, on-your-job demonstration today.

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NEW PUBLICATIONS . . .
continued

pable of supporting loads up to 10,000 lb on each leg. The publication also gives details of the interchangeability of specially-designed U-heads, sprockets, adjustable legs and base plates. — **The Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N.Y.**

ELECTRONIC BATCH CONTROLS—Electronic controls for the remote control of batch plants are explained in an 8-p catalog (KJ-685) available from C.S. Johnson. The catalog illustrates how the controls can be set for automatic batching of from ½ to 6 cu yd for a variety of pre-set mixes. Auxiliary controls for installation on the floor of the batcher and at the batcher discharge gates are also described. **—C.S. Johnson Co., P.O. Box 71, Champaign, Ill.**

MASONRY SAWS—A Truco folder describes the company's newly expanded line of masonry cutting equipment, including abrasive and diamond blades, heavy-duty masonry saws, concrete saws, a standard masonry saw, and a stone cutting saw. **—Truco Masonry Drilling Division, Wheel Trueing Tool Co., 3200 West Davison, Detroit 38, Mich.**

STEEL FORMS—A 12-p catalog describes the latest design features of EFCO steel forms for concrete construction. It has simple design illustrations that show how the forms may be locked together. The catalog pictures various form set-ups for curved and tapered walls, tunnels, columns, corbels, and offsets. Specifications are included. — **Economy Forms Corp., Box 128-N, Highland Park Station, Des Moines, Iowa.**

HYDRAULIC RAMS AND PUMPS—The new Ram-Pac line of hydraulic rams and independent pumps are detailed in an 8-p catalog from Duff-Norton. Bulletin AD-90 provides specifications for 12 rams with capacities from 10 to 100 tons. It also describes two hand pumps, three power pumps, attachments, and accessories. A table shows how a series of rams can be actuated by one pump.—**Ram-Pac, Duff-Norton Co., Box 1889, Pittsburgh, Pa.**

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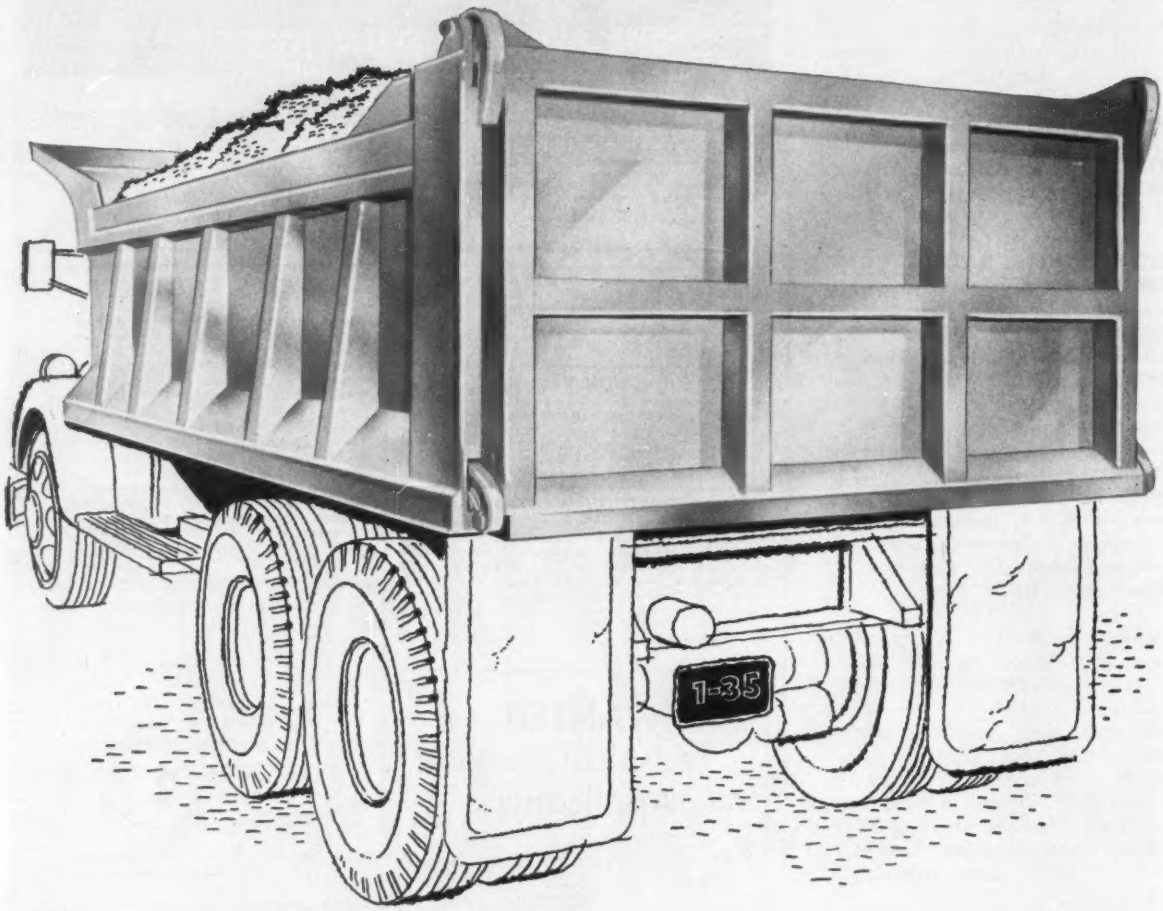

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An aluminum dump body weighs approximately one-half that of a steel unit with equal capacity. This means bigger dump bodies are possible . . . you get more payload every trip carrying more material—less deadweight. Plus, you get better tire and gas mileage.

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Whether you're hauling sand, gravel, rock, crushed stone, shale or dirt, loads free and dump quickly, easily—you get faster work cycles.

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Rugged aluminum alloy construction can withstand the shock loading and abrasive wear of hauling service—and aluminum can't rust. Aluminum is practically maintenance free—never needs painting. A simple washing cleans an aluminum dump body thoroughly.

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Watch Reynolds TV Shows: "Bourbon Street Beat" and "Adventures in Paradise"; and, resuming in October, "All Star Golf"—ABC-TV

REYNOLDS ALUMINUM

One Filter Cleans Two Air Intakes

PORTABLE COMPRESSORS, equipped with an unusual air cleaning system, are saving a Gunite contractor both time and money on his equipment maintenance.

Johnson-Western Gunite Co. of Gardena, Calif., operates a number of large portable air compressors. As original equipment, all of them carried two oil bath air cleaners—one for the engine, the other for the compressor air intake. The compressors constantly worked in a dusty atmosphere, and the oil bath cleaners had to be serviced frequently and at considerable expense.

To lengthen the time interval between filter services, Johnson-Western revamped the air cleaner systems on four 600-cfm Ingersoll-Rand compressors and on one 365-cfm Chicago Pneumatic unit. In place of the two original cleaners, they installed a single Farr dry, two-stage RotoPamic air cleaner. It services the air intakes of both engine and compressor.

This air cleaning system saves space and reduces maintenance costs because it does not have to be serviced as often as the oil bath cleaners.

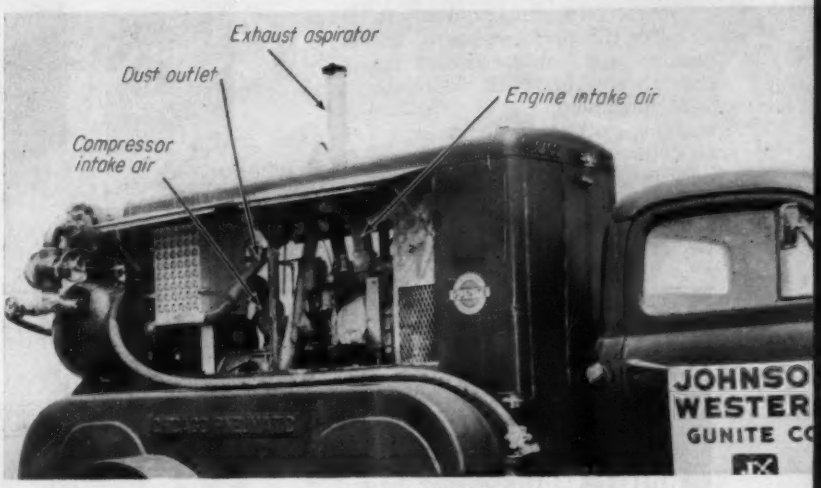
Ray Morris, superintendent of equipment for Johnson-Western, reports that the oil bath cleaners on the I-R compressors were serviced twice a week. Each time 3 gal of oil were used per air cleaner. In addition, the 8 gal of crankcase oil in the compressor's GM 6-71 diesel engine was changed once a week. This amounted to 14 gal of oil per compressor per week.

With the new air cleaning system, Morris reports, engine oil has to be changed only once in three weeks, and the RotoPamic air cleaner needs servicing only every 1,500 hr. Engine maintenance, too, has been reduced because of cleaner air.

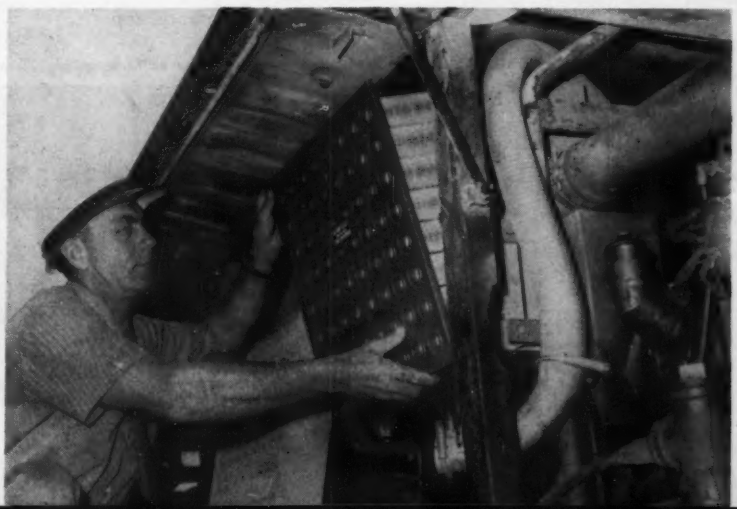
As an additional benefit, Johnson-Western also was able to extend the time interval between overhauls of the diesel engines. With the oil bath filters, they overhauled the compressor engines approximately every 3,500 hr, now they run them for 6,000 hr.

One 64-tube RotoPamic air cleaner for the Ingersoll-Rand compressors costs about $310, or $345 installed. Replacement cartridges cost about $53 each. The smaller, Chicago Pneumatic compressor was equipped with a 48-tube cleaner costing $275. Cost of a replacement cartridge for this unit is $40.

The company also operates other machines equipped with RotoPamic filters. One such unit is a Gunite mixing machine that was built by Johnson-Western's own men. On this machine the intake hopper is just in front of the engine. At the mouth of the hopper is a grille with a horizontal knife blade that slits open cement bags. This covers the rig's 2-cyl Wisconsin engine with a cloud of cement dust. Under these operating conditions the engine was overhauled every three months. To fight the dust, a two-tube RotoPamic air cleaner was installed. Now they're



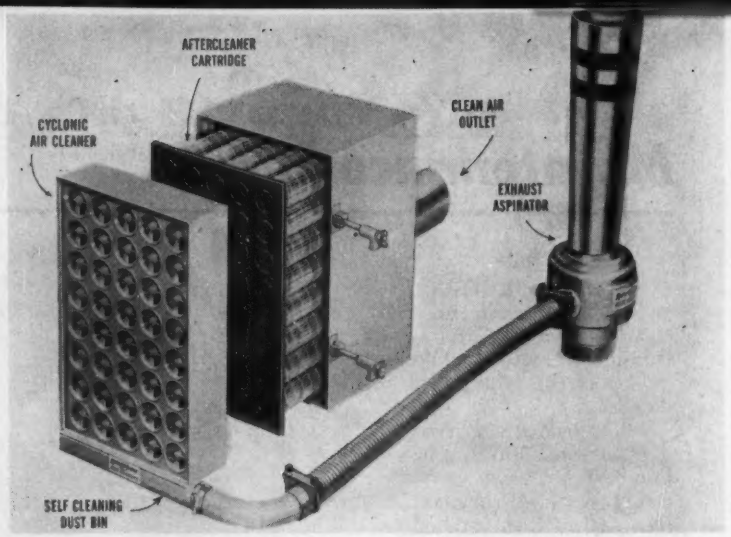
FILTER INSTALLATION—Ducts carry clean air from filter to engine and compressor intakes.



SERVICING—Vern Silvers, field superintendent, replaces the dry paper cartridge.

overhauling the engine only once a year.

Johnson-Western is quite happy with the performance of the various test installations of the Farr air cleaners. N. R. Saunders, J-W president, says: "In our business, maintenance problems from dirty air get close attention, not just because our equipment is expensive, but because the production of a 10-man crew often depends on the performance of one power plant. We decided to test the Farr RotoPamic system using one air cleaner unit for both the diesel power and air compressor intake. The results have been most satisfying."



AIR CLEANER ASSEMBLY—All parts except the paper cartridge are permanent.

How the Filter Works

Basically the filter assembly consists of a permanent cyclonic air cleaner and a replaceable aftercleaner cartridge. The cyclonic cleaner portion is made up of small circular openings with deflector vanes. Air passes over the deflector vanes and acquires a swirling motion that centrifuges the dust particles against the walls of the tubes. The dust is carried to a bin at the bottom of the cleaner by bleed-off air and is discharged into the atmosphere through an aspirator connected to the exhaust system of the engine. Hot exhaust draws out the bleed-off air along with the dust and discharges them with the exhaust gases. This action of the cleaner removes about 90% of the dust from the air.

After passing through the cyclonic cleaner, the air reverses direction and passes back along the discharge tubes. The tubes again give the air a circular motion centrifuging out additional dust particles.

Then the air enters the replaceable impregnated paper filter element, again reversing direction. The pleated paper filters purify air once more before it leaves the cleaner.

Servicing is simple. The cyclonic air cleaner is self cleaning, but it should be inspected periodically and collected material removed. The filter element is simply removed, discarded, and a new one inserted in the assembly.

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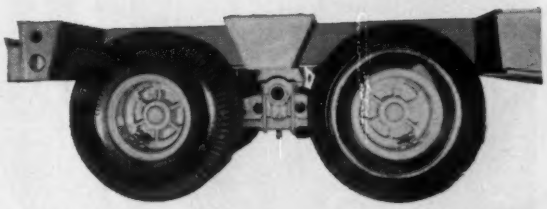
The new 1960 Fruehauf Carryall line offers heavy-equipment haulers a completely new concept in carryall design. Strength is concentrated along two extra-rugged beams on the *outside* where most loads are normally concentrated. This new concept in carryall design completely eliminates two unneeded *interior* beams to reduce weight, increase overall resistance to operational damage. New wide frame design reduces carryall length by 18″, increasing maneuverability in tight spots. Floored loading area forward of drop, on all models, is increased by a full 68 square feet for greater load carrying capacity.

The new 1960 Carryall line is available in 20, 25, and 35 ton capacities, in both level and drop deck models for over-and-off road transport. See the new Fruehauf Carryalls at your Fruehauf Branch today.



Neway Tandem gives greater stability. Combination spring-walking beam gives unloaded carryalls an easier ride. When unit is loaded springs make contact with the beam so that suspension functions as a Walking Beam Tandem.

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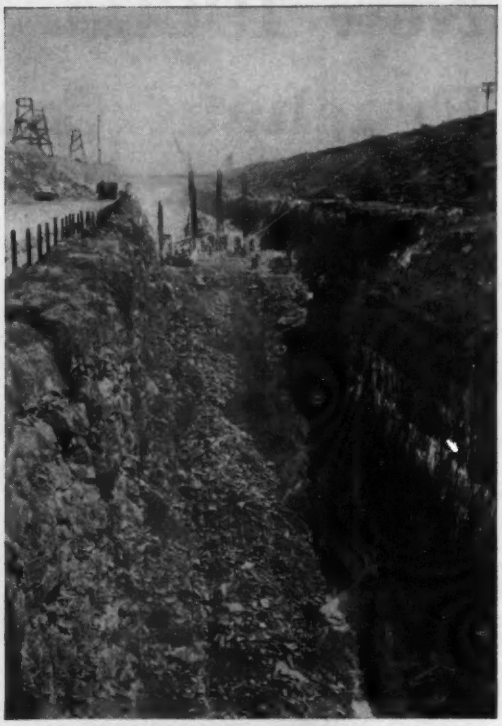

4-MILE TRENCH FOR NIAGARA POWER PROJECT.
Blast holes being bored with Bethlehem Hollow in section of 4-mile trench at Niagara Power Project. The completed trench will hold twin water conduits, to carry Niagara River water to new power plant below Niagara Falls.

NEW WATER TUNNEL FOR NEW YORK CITY.
Bethlehem Hollow is shown at work near No. 6 Shaft of West Delaware Tunnel, at Livingston Manor, N. Y. The 44-mile tunnel will augment New York's water supply system.

Bethlehem Hollow holds down your drilling costs, even in the hardest types of rock . . . because it's rolled from steel specially developed for toughness, and resistance to fatigue.

Bethlehem Hollow comes in Carbon and Ultra Alloy grades, in rounds, hexagons, and quarter-octagons. It is regularly furnished in 18 ft to 27 ft lengths. Be sure to use Bethlehem Hollow on your next rock removal job.

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Number of copies of this issue printed 52,212

A

Allis-Chalmers 140-141
Allison Div., General Motors Corp. 37
Alpha Portland Cement Co. 49
American Mutual Liability Insurance Co. 74-75
Armco Drainage and Metal Products, Inc. 178
Atlas Powder Co. 144-145
Audio Equipment Co., Inc. 147
Austin-Western Works, (Const. Equip. Div.) Baldwin-Lima-Hamilton Corp. 18-19

B

Barber-Greene Co. 60-61
Bethlehem Steel Co. ..33, 34-35, 36, 72, 158, 192
Broderick & Bascom Rope Co. ..... 2nd Cover
Buffalo-Springfield Co., Div. Koehring Co. 161
Bullard Company, E. D. 172
Butler Bin Co. 56

C

Caterpillar Tractor Co. 53, 97, 104-105
Chevrolet Div., General Motors Corp. 54-55
Chicago Pneumatic Tool Co. (Reich Drill Div.) 64
Cities Service Oil Co. 57
Cleveland Trencher Co. 180
CONSTRUCTION METHODS and Equipment 66-67
Continental Motors Corp. 32
Curtiss-Wright Corp. (Marquette Div.) .. 166

D

Dayton Sure Grip & Shore Co. 148
Dixon Valve & Coupling Co. 176

E

Eaton Manufacturing Co. (Axle Div.) .. 169
Electric Steel Foundry Co. 129, 130
Euclid Div., General Motors Corp. 120-121, 168

F

Federal-Mogul Service Div. Federal-Mogul-Bower Bearings, Inc. 5
Firestone Tire & Rubber Co. 28
Ford Motor Co. (Industrial Engine Div.) 146
Foster Co., L. B. 10
Fruehauf Trailer Co. 191
Fuller Manufacturing Co. 58

G

Gar-Bro Manufacturing Co. 40
General Electric Co., (Lamp Div.) 6
General Tire & Rubber Co. 63
Goodrich Industrial Products Co., The B. F. 1
Goodrich Tire Co., The B. F. Division The B.F. Goodrich Co. 23, 24-25
Griffin Wellpoint Corp. 2
Gulf Oil Corp. 70-71
Gulf Publishing Co. 169

H

Harnischfeger Corp. 114-115
Homelite Div., Textron, Inc. 156
Hough Co., The Frank G. 65
Hyster Company 116

I

Insley Manufacturing Co. 157
International Harvester Co. (Construction Equipment Div.) .. 41, 42-43, 44-45, 46-47, 48
(Motor Truck Div.) 80-81
Iowa Construction Equipment Corp. 137
Iowa Manufacturing Co. 30-31
Irvington Form & Tank Corp. 169

J

Jaeger Machine Co., The 84-85, 172
Johns-Manville (Packing & Friction Materials Div.) .. 181

K

Keasbey & Mattison Co. 110-111
Koehring Co. (Buffalo Springfield Div.) 161
(Koehring Div.) 160

L

Lehigh Portland Cement Co. 78-79
Le Roi Div., Westinghouse Air Brake Co. 99
Lima Works, Construction Equipment Div., Baldwin-Lima-Hamilton Corp. 20
Longyear Company, E. J. 113
Lufkin Rule Co., The 68

M

Mack Trucks, Inc. 154-155
Macwhyte Wire Rope Co. 3
Madsen Works, Construction Equipment Div., Baldwin-Lima-Hamilton Corp. 21
Marion Power Shovel Co. 14-15
Marlow Pumps Div., Bell & Gossett Co. .. 177
McGraw-Hill Book Co., Inc. 184
Mobile Drilling, Inc. 173
Monarch Road Machinery Co. 163
Moretrench Corporation 77
Motorola Communications & Electronics, Inc. 83

N

Northwest Engineering Co. 7

O

Onan & Sons, Inc., D. W. 50-51

P

Patent Scaffolding Co., Inc. 174
Porter Company, Inc. H. K. (Leschen Wire Rope Div.) 159, 176, 184
Prime Mover Co., The 190

R

Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp. 59
Rankin Manufacturing Co. 162
Remington Arms Co., Inc. 166
Reynolds Metals Co. 188
Richmond Screw Anchor Co., Inc. 22
Rodgers Hydraulic, Inc. 185

S

Safway Steel Products, Inc. 62
Schield Bantam Co. 149
Schramm, Inc. 183
Seaman Corp. (Seaman-Gunnison Div.) 131
Shell Oil Company 124-125
SKF Industries, Inc. 86
Spencer Chemical Co. 171
Sprague & Henwood, Inc. 163
Stanco Mfgs. & Sales, Inc. 159
Standard Oil Co. (California) 26
Standard Oil Co. (Indiana) 100-101
Stang Corp., John W. 136
Superior Concrete Accessories, Inc. 122
Symons Clamp & Mfg. Co. 27

T

Texaco Inc. 8-9
Thew Shovel Co. 112
Timken Roller Bearing Co. ..... 4th Cover
Trailmobile, Inc. 13
Travelers Insurance Companies, The 113
Twin Disc Clutch Co. 127

U

United States Rubber Co. (Mechanical Goods Div.) 38
(U.S. Royal Truck Tires) 150
United States Steel Corp. 29, 167
Universal Atlas Cement Co., Div. United States Steel Corp. 29
Universal Form Clamp Co. 182

V

Viber Company 175
Vibro Plus Products, Inc. 102

W

Wisconsin Motor Corp. 128
Worthington Corp. 16-17, 32

Y

Yale & Towne Mfg. Co. (Trojan Div.) ..... 3rd Cover

CLASSIFIED ADVERTISING

F. J. Eberle, Business Manager

Employment Opportunities 187

Equipment (Use or Surplus New)

For Sale 187

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Methods Memo . . .

Cut and Cover Snow Tunnels

Building a "city beneath the snow" in Greenland is almost like building any other tunnel by the cut and cover method. The snow city is being built by the Army on the Greenland Ice Cap about 800 mi from the North Pole. When completed it will contain living spaces, laboratories, shops, and a hospital for year-round polar research and development programs.

Main Street is 24 ft deep and 20 ft wide with walls and roof of snow and ice. To build a street, the Army first digs a trench with walls that are closer at the top than at the bottom. Steel angles, or rails, then are attached to the walls about 18 in. below the top of the trench. The rails support corrugated steel sheets that serve as roof forms. The roof itself is made of snow piled on top of the steel sheet.

The sheets, fabricated by Republic Steel's Culvert Div., are set over the trench, the sheet edges resting on the rails. A snow plow then blows processed snow over the sheets. When the snow hardens, the forms are removed and reused at another location in the trench.

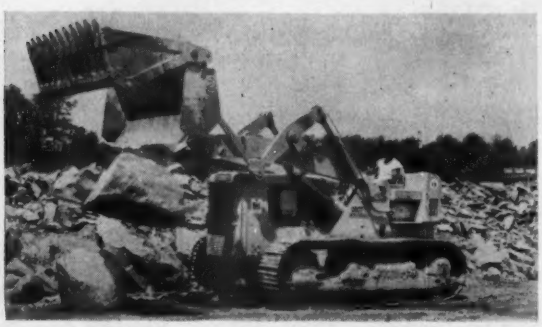
Harvesting a Nuclear Reactor

Farmers near Murdock, Neb., woke up one morning recently and found a 65-ton nuclear reactor in the middle of a corn field. A trailer carrying the reactor had slipped off the road, and the cylinder rolled 150 yd down a field. Three of the moving crewmen were injured slightly.

The vessel started its journey from the Baldwin-Lima-Hamilton plant at Philadelphia. It went by ship around Florida to New Orleans, then by barge up the Mississippi and Missouri Rivers to Plattsmouth, Neb., and 80 mi by truck to Hallam, where a nuclear generating plant is under construction.

It had taken 3 yr to plan the overland move. More than 1,500 telephone and power lines along the route were either raised or buried, and 20 bridges were shored up to withstand the heavy loads. Everything had gone smoothly, but only 20 mi from its destination the reactor took the plunge into the corn field.

Retrieving the tank was a project in itself. First, workmen laid wooden 8x8's and 10x10's from the tank to a shallow pit halfway between the tank and the road. Then, four winch trucks eased the vessel up to the pit. At the same time, the 8,400-lb steel cradle on which the tank rested on the trailer was placed in the pit and the tank rolled onto it. Finally, the wooden "railroad" was extended to the road, and the tank was brought the rest of the way to the truck. The recovery took 3½ days.



This Is a Rock Crusher?

The Cedar Bluff Stone Co. of Canton, Ky., spares much secondary drilling and blasting simply by picking up large rocks and dropping them until they split sufficiently to fit loaders and crushers. Initial blasting leaves many rocks too large for both loaders and crushers, and the Drott TD-15 Four-in-One moves the rocks from the blasting area, smashes them to pieces, and returns them to the loader when they're small enough for the crusher.

Warehouses Under Water

Installation of the world's first underwater storage facility has just been completed off St. Petersburg Beach, Fla. The facility consists of two 10,000-gal rubberized fabric tanks resting on concrete cradles about 35 ft deep in the Gulf of Mexico.

The tanks can store practically any liquid, gaseous, or bulk material. And the supplies are safe from natural disasters, such as hurricanes and tornadoes, and from nuclear contamination. Pipelines connect the tanks with supply points on shore, and pumps either fill or empty the tanks.

Manufacturer of the tanks is the Firestone Tire & Rubber Co. In the future they plan to build tanks with capacities up to 1 million gal.

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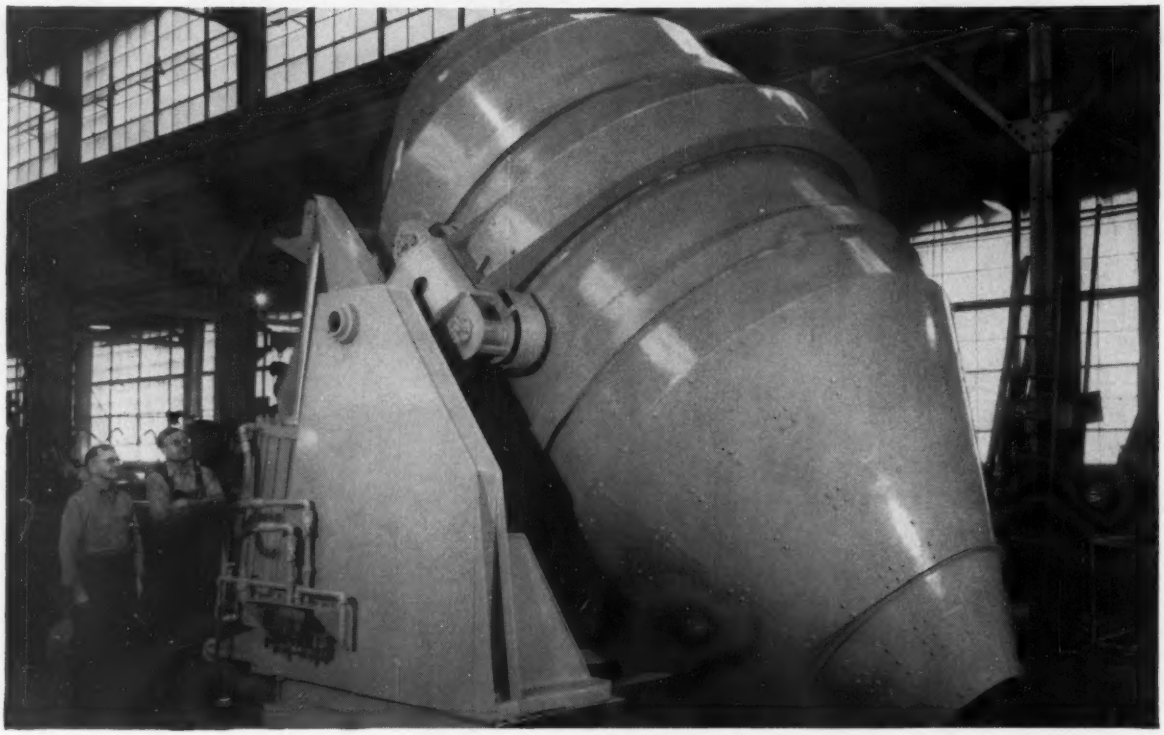

With its 10-cu-yd capacity and weighing 56,000 lbs., this T. L. Smith tilting mixer is the world's largest. By using Timken® tapered roller bearings in the transmission, main rollers and edge rollers, T. L. Smith engineers increased this giant's life to three times that of older, smaller capacity units.

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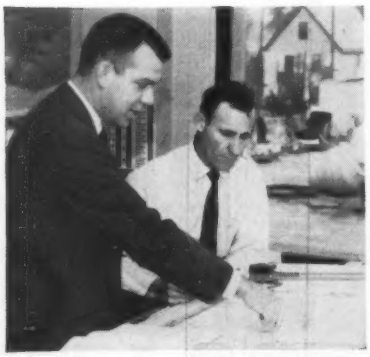

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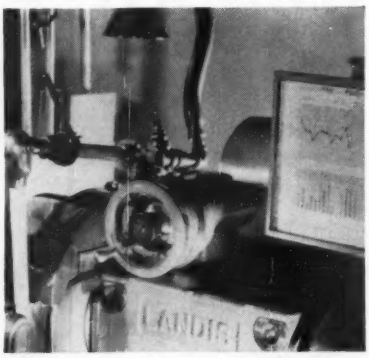

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